LDEQ 2019 MAMLs

The 2019 MAMLs, built on Freightliner M2 106 chassis, have an overall length of approximately 41 feet and a total height of 13’6”. The 32’ long laboratory is 8’ wide with an interior height of 8’ and includes an 8’ by 18” slide out to provide additional space within the laboratory.

The all diesel vehicle has dual 60 gallon fuel tanks that supply both the vehicle and a 30 kilowatt water cooled diesel generator that provides all the necessary electricity to power the laboratory and instrumentation. This generator is backed up by a second identical 30 kilowatt generator when needed.

Instrumentation is included for the continuous monitoring of the following substances:

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| **Target Analyte** | **Instrumentation** |
| Hydrogen Sulfide (H2S) | Teledyne Model T101 H2S Analyzer |
| Sulfur Dioxide (SO2) | Teledyne Model T100 SO2 Analyzer |
| Nitrogen Oxides (NO, NO2, NOX) | Thermo Model 42iQ-ACANN NOx Analyzer |
| Carbon Monoxide (CO) | Thermo Model 48iQ-ACN CO Analyzer |
| Ozone (O3) | Teledyne Model T400 Ozone Analyzer |
| Particulate Matter (PM10, PM2.5) | Teledyne T640 Continuous PM Mass Monitor w/ 640x |
| Mercury (Hg) | Tekran Model 2537X – Total Gaseous Mercury (TGM) Analyzer |
| Methane/Non-Methane Hydrocarbons (CH4/NMHC) | Thermo Model 55i-A1PHCA CH4/NMHC Analyzer |
| \*Ammonia (NH3) | Teledyne Model T201 Ammonia Analyzer |
| Meteorology (Wind Speed, Wind Direction, Barometric Pressure, Temperature, Relative Humidity) | Columbia Weather Systems Model Magellan MX 500 w/ Weather MicroServer and a Weather Display Console |

\*Indicates new capabilities for the MAML.

All of the data is reported to an Agilaire Model ESC 8872 B Site Node/Data Logger that provides a platform for data polling, storage, archiving, validation, and reporting. A Teledyne Model T700H Dilution Calibrator with two mass flow controllers and a Teledyne T701 High performance zero air generator provide diluted calibration gasses for the multipoint calibrations required by most of these analyzers.

Air sampling and analysis is conducted by three gas chromatographic (GC) systems found on each of the 2019 MAMLs. The three air systems are capable of sampling from either canister samples collected at other locations or directly from the ambient air through silicone lined, heat traced, stainless steel tubing. Each system has a different analytical detector including mass spectroscopy detector (MSD), flame ionization detector (FID), and a pulsed flame photometric detector (PFPD). A fourth GC system is found on one MAML that is capable of performing soil and water analysis and is equipped with a GC/MS.

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| **Target Analytes & Method** | **Instrumentation** |
| Air Toxics– 56 Target analytes with tentatively identified compounds provided (TO-15) | Markes Unity-xr w/ CIA Advantage-xr Thermal Desorber, cold trap, Kori-xr water management device w/ Agilent 7890B/5977B Inert source GC/MSD |
| \*Ozone Precursors/Hydrocarbons - 30 Target Analytes (PAMS) | Markes Unity-xr w/ CIA Advantage-xr Thermal Desorber, cold trap, Markes Dryer kit for Air Server w/ Agilent 7890B GC/FID |
| \*Speciated Sulfur Compounds– 14 Target Analytes (ASTM D5504) | Markes Unity-xr w/ Air Server-xr, cold trap, Markes Dryer kit for Air Server w/Agilent 7890B GC/PFPD |
| \*Soil & Water Samples - Wide range of purgeable Volatile Organic Compounds (VOC) – Multiple target analytes with tentatively identified compounds provided (EPA SW-846 Test Method 8260) | OI 4660/4100 water/soil auto sampler with pHDetect and Eclipse Purge-and-Trap sample concentrator w/ Agilent 7890B/5977B Inert source GC/MSD |

\*Indicates new capabilities for the MAML.

Other onboard equipment include a hydrogen generator for the production of fuel gas, zero air generator for the production of combustion gas, a mercury free air generator, digital flowmeters, digital manometers, digital temperature controllers, and an array of digitally controlled solenoid valves used to select between sampling ambient air or calibration gas. A front mounted Northern-Air five-ton air conditioning/heating system provides sufficient temperature control for most activities inside the MAML. If needed, five roof mounted air conditioners may be utilized for zone cooling on demand, otherwise are available as back-up to the main unit. High pressure compressed gases are housed in an isolated room at the rear of the laboratory and a gas detection system, with oxygen and hydrogen sensors throughout the lab provides protection to personnel. To facilitate the movement of the compressed gas cylinders, a wide rollup door is provided at the rear of the laboratory along with a folding hydraulic tailgate lift. Also attached to the rear of the laboratory is a fold out ladder that provides access to the roof and a pneumatic telescoping mast for raising the meteorological sensor.