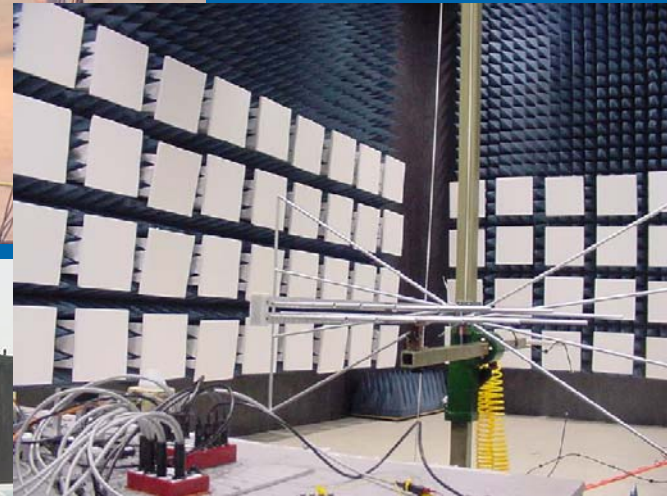


Amerex Vehicle SafetyNet



Why SafetyNet is a good thing

Can we use more than 4 Gas Sensors?

How about Optical? Can we use Optical?

How do we know if someone set off the system manually
.... or did it automatically discharge?

Can we signal when system maintenance is due?

How about an Agent Discharge Delay?

Can we use a combination of Foam and Dry Chemical?

How do we identify which sensor is in alarm?

Can we communicate with SAE1708 systems?

Can we have a better looking Operator Display?

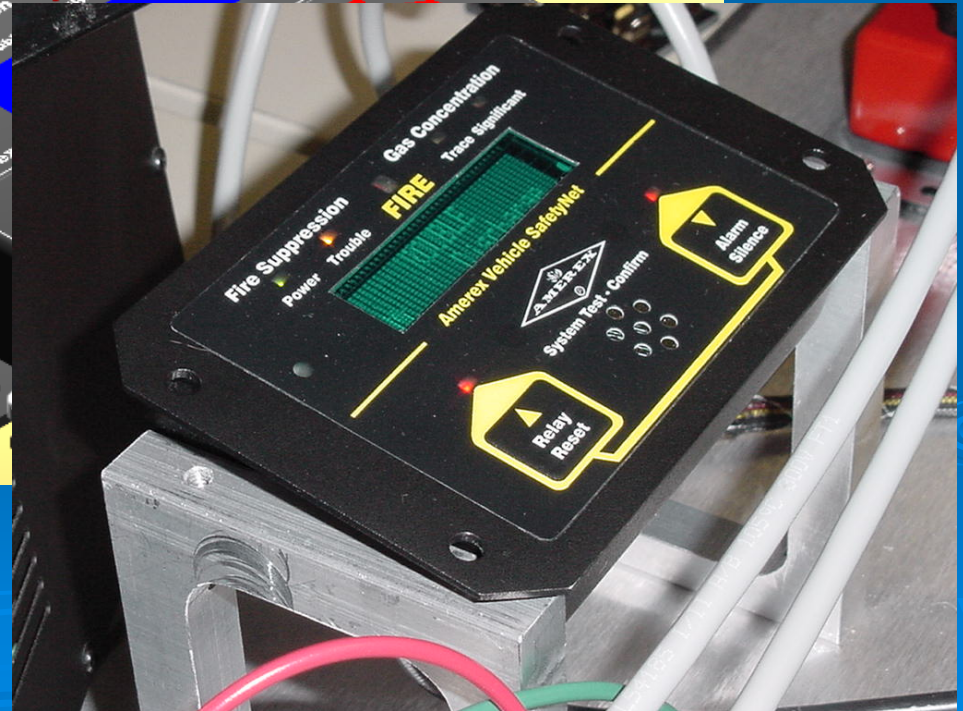
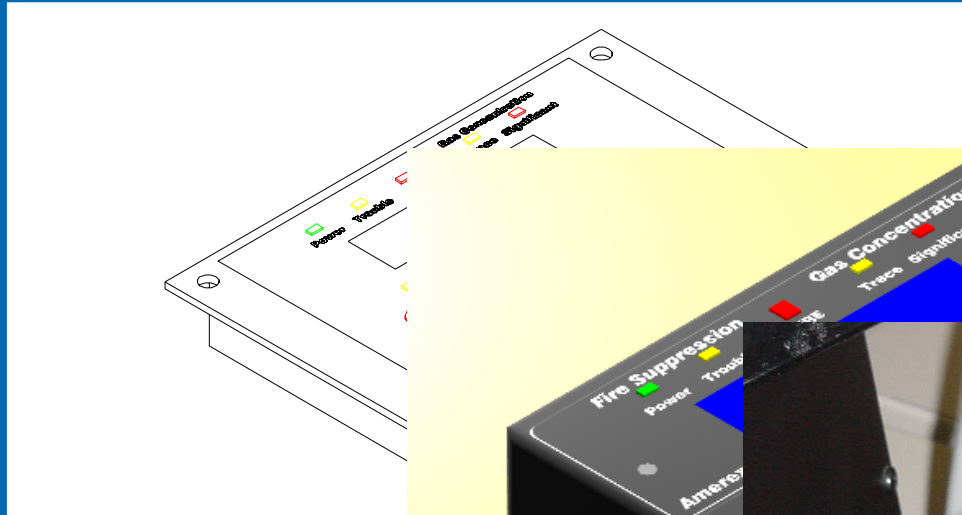
Can you give us everything we want

... and still keep it simple?



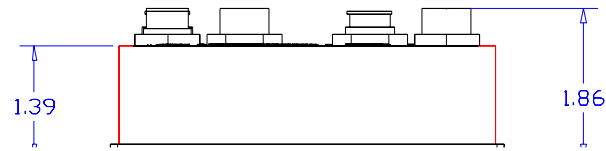
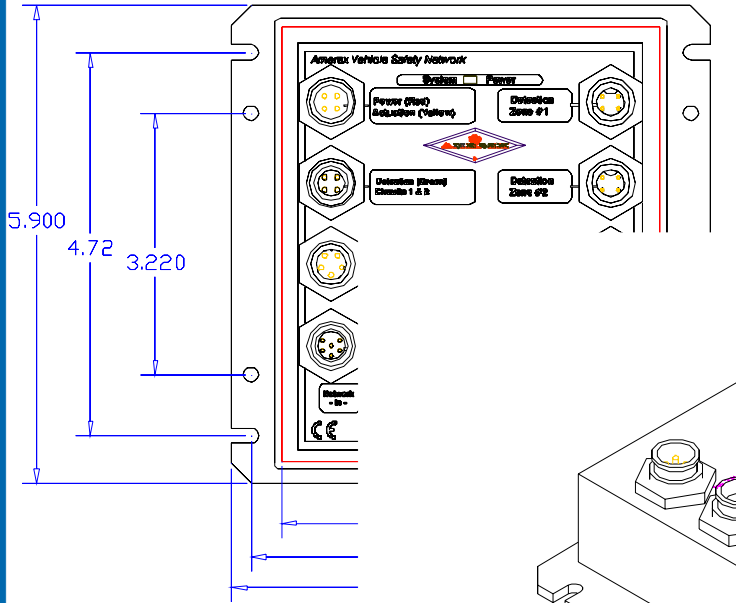
SafetyNet System Design

Operator Display - p/n 16389

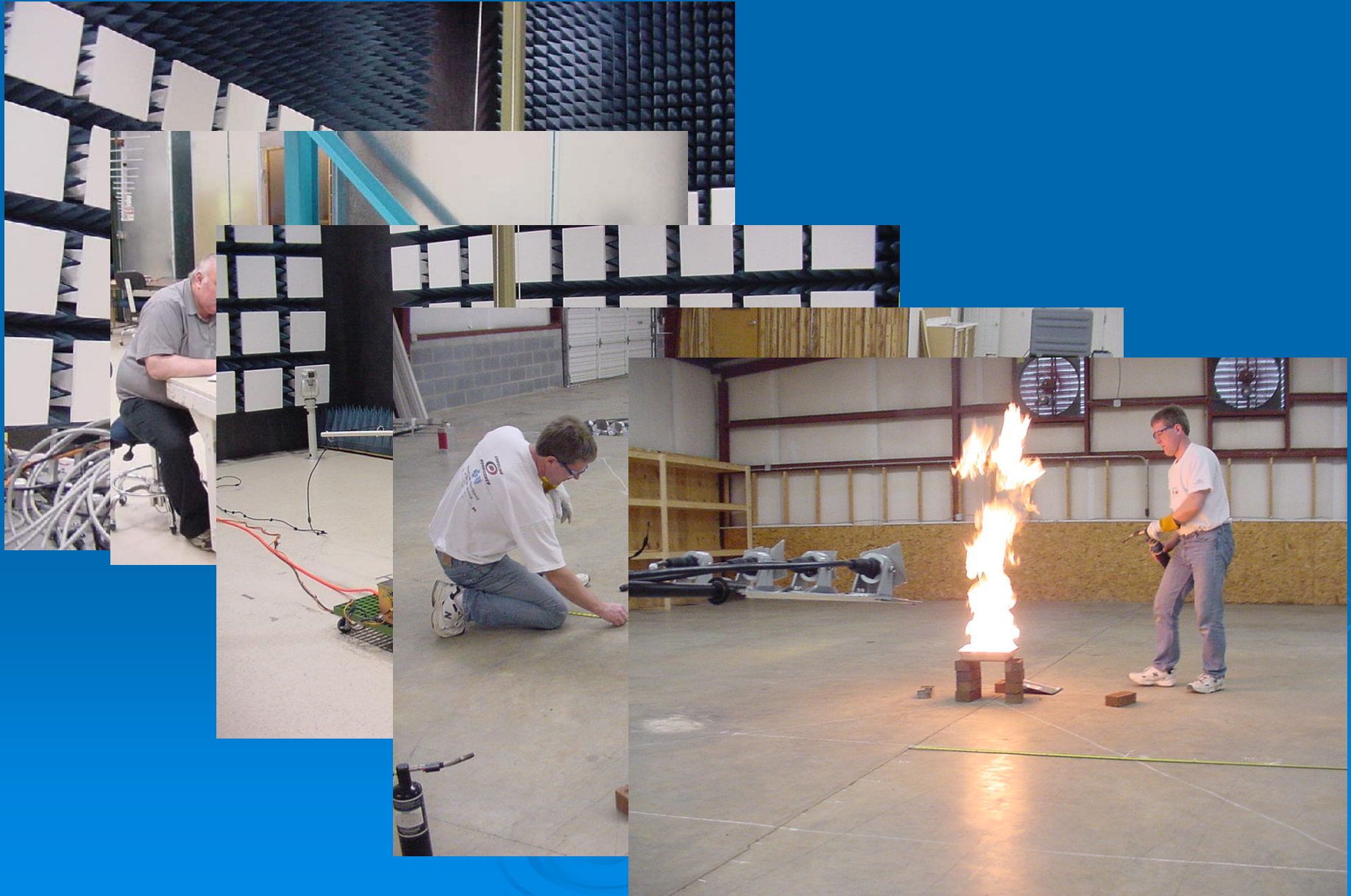


SafetyNet System Design

Driver Panel - p/n 16390



SafetyNet System Testing



Why do we need SafetyNet anyway?

- Customer request for more than (4) Gas Sensors
- Improve Troubleshooting Diagnostics
- Customer request for Zoned Release Capability
- Customer request for Multiple Cylinder release capability
- Customer request for CE certification European Sales
- Reduce system power consumption
- Addition of Optical Flame Detectors to System
- Reduce the number & length of cables
- Added relay contacts for:
 - Fire, Gas & Trouble conditions

What's all this about SafetyNet anyway? (part 2)

- Customer request for a Transit Friendly Operator Display
- More flexible/customized system installation
- Customer request for Event Recording & Data Logging
- Addition of Brake Overheat sensors to system
- Interface to SAE J1708, etc networked systems
- Backwardly compatible with existing System Wiring & Sensors
- Provide Battery Backup for Gas Detection

How does SafetyNet Work?

➤ The *SafetyNet* System uses:

- A Network of Application Specific Modules,
- Modules are located near the hazard area,
- Reduces and Simplifies System Wiring,
- Modules are linked via a single 4-wire cable,
- Proprietary SafetyNet Software polls each module,
- Change of Sensor and System status is event logged with time and date stamp in the Operator Display Module,
- Data may be downloaded using a Notebook Computer

.. *But really, how does it work?*

1. SafetyNet is a self-configuring network.
2. Each *Module Type* is Recognized and Identified,
3. Each *Sensor Type* is Recognized and Identified,
4. After all Modules and all Sensors are recognized, the data is transmitted back to the Operator Display,
5. The Operator Display maintains a record of the SafetyNet Configuration – *(It's a self configuring system)*
6. Additional detail (module & sensor I.D., relay delay, etc) can be programmed via a notebook computer.
7. System configurations can be preprogrammed into each Remote Display for Specific OEM requirements
8. During operation, any event change is recorded.
Trouble & Alarm conditions are displayed on the VFD

Target Markets for Safety Net

- ❑ Retrofit existing AMGaDS III F&G Products (*Backward Compatibility*)
 - ❑ Replace 14464 & 14465 with VFD & Driver
- ❑ Zoned Releasing System
 - Use 16389 VFD & 16395 Detection/Release Module
- ❑ Multi Zone Gas Detection
 - Use 16389 VFD & 16391 Detection Module
- ❑ Safety Diagnostic Tool
 - Measure Brake, Engine Component, Gas Levels. Use 16391 Detection Module & Notebook PC

Operator Display

- Purpose:
 - Flushmount Display & System Control
 - Performs Event Logging
 - Interfaces to a Notebook PC
 - No programming necessary
 - All Safety Net system modules contain default logic in the event of system failure.
 - They work even if the network fails.
- Application:
 - Used with all Safety Net Modules
- Features:
 - VFD Display (Vacuum Fluorescent Display)
 - Bright Display, Wide Viewing Angle
 - Wide Temperature Range vs LCD (-40-+85C)
 - Data Logging capability (2000+ events)
 - Audible Alarm with Silence
 - Relay Reset function
 - Test Status function
 - Some keypad programming features
 - Download data via Handheld PC (windows based)



Driver Panel (similar to 14464)

- Purpose:
 - Provides the majority of basic system needs – Power, Backup Power, Detection, Linear Actuator, Relays, Pressure Switch & Communication.
 - Relay interface to Multiplexed System
- Applications:
 - Multiple Sensor Inputs – Fire & Gas
 - Fire & Gas Detection
- Features:
 - Similar to existing p/n 14464
 - Same footprint as 14464
 - RS-485 Interface
 - Sensor Self Recognition (spot, gas, flame, RTD)
 - (3) Relay contacts (fire, gas, trouble)
 - Analog Pressure Switch input
 - Internal Backup Battery
 - Multi-Sensor Capable
 - Reduced Power Consumption



Detection & Release Module *(optional)*

- Purpose:
 - Allows for Agent Cylinder Release Zoning
- Application:
 - Used for the Battery Compartment, Engine, Brakes, etc
 - Use it for second shot or timed Agent Cylinder Release
- Features:
 - Network Interface
 - Two cylinder release capability
 - Two detector input capability



Detection Module *(optional)*

Purpose:

- Allows for the addition of a multiple number and type of sensors.
- Intended to provide localized detection
- Can operate as a standalone detection module for a Brake Overheat or Gas Detection System.

Application:

- Use it for the Battery Compartment, Engine, Brakes, etc
- Use it for second shot or timed Agent Cylinder Release
- Use it as a Data Logging Input Module (monitor Brakes, Engine Compartment Temp, Ambient Gas Levels, etc.)

Features:

- Network Interface
- Four detector input capability
- Multiple variety of sensors
- Self recognition of specific sensors



Releasing Module *(optional)*

➤ Purpose:

- Allows for the addition of multiple agent cylinder release
- Allows for pressure monitoring multiple agent cylinders
- Allows for second shot capability, timed releases, etc

➤ Application:

- Directional Agent Release
- Zoned Agent Release
- Supervised release of large hazard areas.

➤ Features:

- Network Interface
- Four Agent Cylinder Release
- Supervision of Agent Cylinder Actuation
- Monitors Agent Cylinder Pressure



What are the differences between AMGaDS III & SafetyNet

➤ AMGaDS III System Shortcomings:

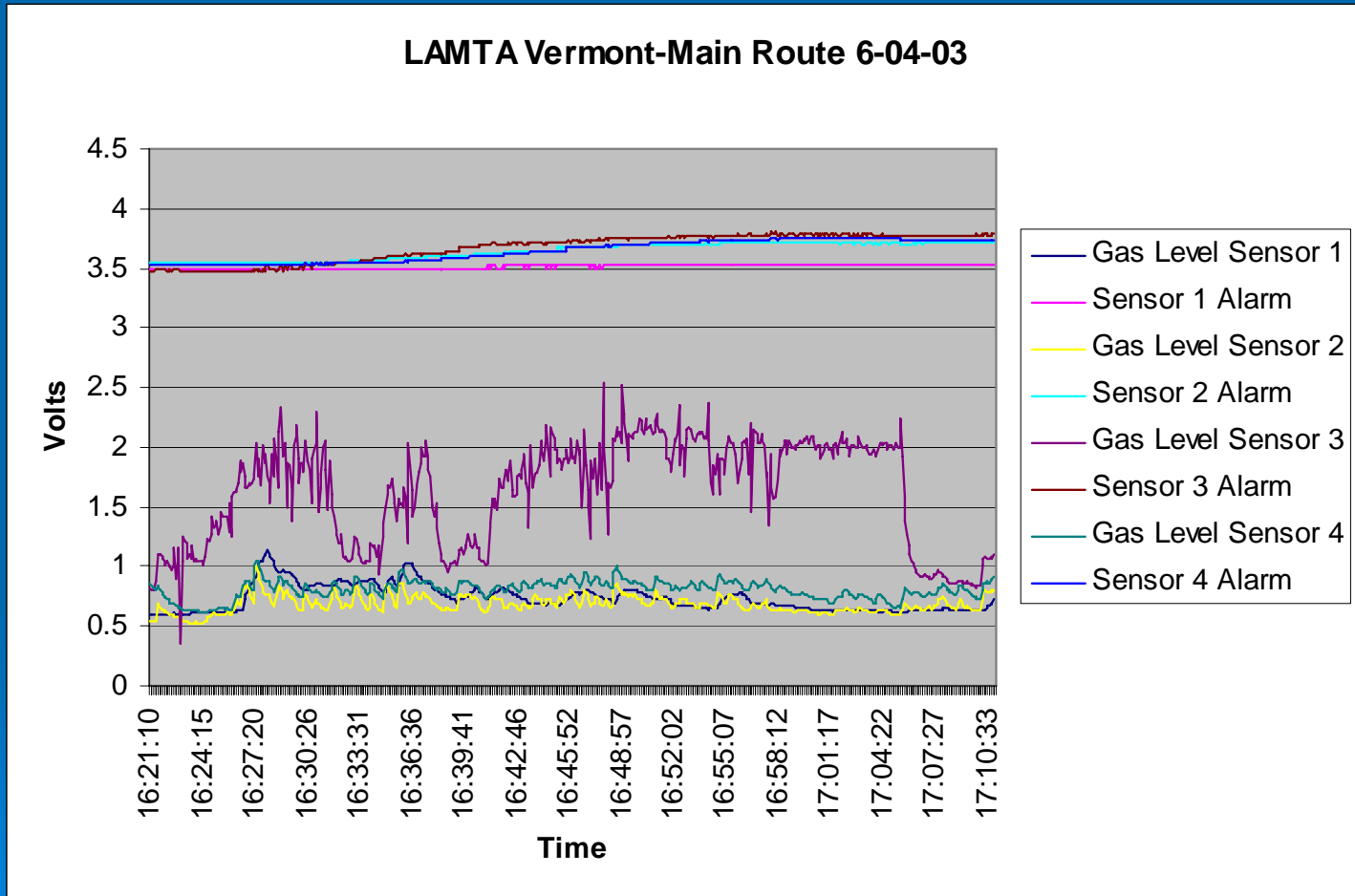
- More than 4 gas sensors – can't do it
- Zoned cylinder releasing – can't do it
- Delayed discharge – can't do it
- Network interface – can't do it
- Data Logging – can't do it
- Battery Backup for Gas Detection – can't do it
- System Diagnostic Detail – awkward
- Multiple Cylinder Releasing – awkward
- Optical Flame Detection - awkward

How does SafetyNet make system maintenance easier?

- Ability to program in a Maintenance Schedule
- Data Logging can pin point problem areas
- Ability to document Gas Sensor operating characteristics
- Can record Vehicle ID # vs Event Log download
- Recent Examples:
 - LA DOT June 2003 (*ref Jeff Hollen – Transmark*)
 - NYC MTA October 2003 (*ref Jack Miller or Kendall Pate*)

Data imported to Microsoft Excel from Los Angeles

50 minute Bus Ride June 2003



Agency Approvals & Test Standards

Safety Net & SafeIR Optical Sensors are:

- Factory Mutual Approved
- CE Approved
- Testing conducted at TUV Rheinland & Wyle Labs
- Tested to the following Standards:

SAE J1211

SAE J1455

EC 95/54 (Approval# e11 72/245 95/54 1680 00)

Factory Mutual Std 3260

“Everything should be made as simple as possible, but not one bit simpler”



First SafetyNet Installation – LA DOT South-Central LA

June 2003