Test Plan for Monitoring System during Dry Run

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1 Introduction

During the transportation of the DIRC bar boxes from their current home at SLAC, California to Hall D of Jefferson Lab, Virginia, there will be a real-time minoring system that records information about the bar box itself and the ambient environment. The bar boxes, with various monitoring sensors attached, will be securely placed in a crate inside a refrigerated truck. Data from monitoring sensors will be collected and processed by a computer in the truck (we call it the "DAQ computer"). The DAQ computer will be connected to a router, which then sets up a local WiFi network for data transferring. During transportation, there will be a chase car trailing the truck. Passenger(s) in the chase car can use their laptop to connect to the local network, access and transfer data from the DAQ computer.

2 Components of the Monitoring System

A breakdown of the various components of the monitoring system is shown in Table 1

Sensor	Manufacturer	Count	DAQ System
Camera	The Imaging Source	4/6	TIS
Accelerometer	LORD Sensing	8	LORD
Pressure sensor	OMEGA	3	LORD
Temperature sensor	OMEGA	1	LORD
Flow pressure	ASHCROFT	1	LORD (?)

Table 1: Components of the monitoring system.

3 Test Plan for Dry Run

We would like to test all components of the monitoring system in as close to its final form as possible.

3.1 Run Conditions

We would like to perform each of the following tasks while the chase car computer is:

- Stationary, in the back of the truck
- Stationary, outside of the truck
- In the chase car behind the truck at various distances

3.2 Tasks

3.2.1 Network Basics

- Establish network connection of the local network, e.g. ssh, scp

3.2.2 Camera system

- Establish connection: the DAQ computer can "see" all cameras
- Take videos: can take stable pictures and make into time elapsed movies
- Data transfer: can transfer videos to chase car laptop

3.2.3 LORD system

- Accelerometers: establish connection, take and transfer data
- Temperature sensor: establish connection, take and transfer data
- Pressure sensors: establish connection, take and transfer data

3.2.4 Flow pressure

- Integrate the flow differential pressure sensor system into the gas system
- Verify the system works as expected
- Merge into the data transfer chain as others

3.2.5   Integration

- Verify all subsystems are working

- Establish stable monitoring mode

We expect we will need 1-2 hours of driving time to get to a relevant road and test various speeds and distances.