# Team B: Arcus FVE Test Plan

**Equipment:** Sensor Rig Mount, Wheeled Platform, Base Station
**Location:** NSH B Level
**Description:** Demonstrate collection and visualization of LiDAR and IMU data and generation of an offline map.

**Steps**

| # | Description | Requirement |
|---|---|---|
| 1.1 | Move sensor rig on wheeled platform in a straight line through space 30m at approximately .5 m/s. | - |
| 1.2 | Collect and transmit data for visualization at base station. | MFR8 |
| 1.3 | Process LiDAR and IMU data offline and generate a 3D map. | MFR2, MFR4 |

**Location:** NSH 1305
**Description:** Analyze performance of data collection and odometry in terms of speed and accuracy on teleoperated UAV.

**Steps**

| # | Description | Requirement |
|---|---|---|
| 2.1 | Prior to FVE, perform and record a test flight of UAV at the Lafarge Quarry, collect data, and generate a map offline. | MFR1, MFR2, MFR9 |
| 2.2 | Measure performance by comparing odometry to GPS measurements. | MFR5 |

**Verification**

| # | Description | Requirement |
|---|---|---|
| 1.2 | Provide map back to user at a frequency of at least 0.5 Hz. | MPR8 |
| 1.3 | Generate a 3D map with voxel resolution of at most 50 $cm^3$.<br>Map volume of basement in less than 20 minutes. | MPR2<br>MPR4 |
| 2.1 | Fly at a speed of at least 0.25m/s.<br>Be tele-operable at a range of 20m. | MPR1<br>MPR9 |
| 2.2 | Drift should be less than a meter in total. | MPR5 |