Introductions

Jerad Hicks
UAV Pilot

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Technology Manager
- Must possess a Part 107 Certification from the FAA to operate UAVs commercially
- Aircraft has to be registered with the FAA
- Can not fly higher than 400 ft above the tallest structure you are scanning
- Must fly in VLOS or have an Observer if necessary and maintain direct communication
- Need ATC approval to operate in Class B,C,D & E airspace
- Part 107 waivers required for certain operations (night flight, over crowds, multiple UAVs, etc)
• Pre Flight Self Diagnostic Test
• All payloads are secured to UAV
• Obstacle avoidance
• Sensors (front, bottom, top)
• Intelligent Battery
• Switch between flight modes
• Virtual Geofence
• Mission Planning
• Program Settings
• Calibration
• Max Altitude / Speed Setting
• Return to Home (RTH) Function
• Loss of GPS Signal
• Loss of Controller Signal
• Obstacle Avoidance
• Autonomous Flight Mapping
• Flight Log
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UAV Capabilities and Advantages

Valuable Data Files delivered efficiently, safely and accurately

○ Inspections and Leak Detection
○ Hi Resolution RGB and Thermal Imagery
○ Autocad and PDF Image Overlay
○ 2D Orthomosaic, 3D Point Cloud, 3D Mesh
○ Contours, Volumetrics and Surface Analysis
○ Digital Surface and Design Models
○ Files delivered in local coordinate system
External Inspections

**Inspections**

- 30x Zoom Capability
- Increased Safety
- Removes Personnel Exposure to Heights or Hazardous Environments
- Craft Remains a Safe Distance from Operating Equipment
● Pipeline inspection

● Fire Fighting Hot Spot Detection

● Flare Stacks and Mechanical Equipment

● Structural Heat Loss

● Oil Spill Response

● Security

● Search & rescue
- Internal Inspections
- Hazardous or Uninhabitable Spaces
- On Board Lighting for Inspection in Spaces With Zero Light
- Variable Signal Emission Point for Pilot Control and Video Uplink
- **Existing Condition Verification and Documentation**
  - Imagery
  - Infrastructure
  - Topography

- **High Level Pre-construction Design Review**
  - Slope Arrows and Shading by Slope Range Provide Simulated Watersheds

- **Identify Potential Impacts During Project Planning**
  - Point Clouds and Design Files are Easily Merged

- **Accurate Quantity Tracking During Construction**
High Resolution Geo Tiffs
UAV Topography captures minor surface deviations and yields more accurate results.

**Stockpile Analysis**

- **Conventional Point Topo**
  - 202 Triangles / 116 Vertices
  - 595.9 Cubic Yards

- **UAV Topo**
  - 79,251 Triangles / 39,892 Vertices
  - 560.4 Cubic Yards

6 Percent on 600 Yards is reasonable. As the scale increases, so does the delta.

- Safer than Conventional Survey
- Zero Impact to Operations
- Fast Turnaround
- Variable TIN Density
- Higher Level of Accuracy
- Low Cost

**Comparison of 10 Acre Survey**

- **Conventional**: $7000
- **UAV**: $2000
Progress Tracking and Quantification
- Facility Monitoring / Parking Utilization
- Project Planning
- Project Updates and Progression
- External and Internal Inspections of Hard to Access Areas
- Volumetrics and Stockpile Quantities
- Expedited Data Sharing and Transfer
Questions and Contact Information

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