

FLYABILITY

SAFE DRONES FOR INACCESSIBLE PLACES

Drone Inspections: How to Manage Data for All Stakeholders Involved

Thursday, April 15 2020

04:00 PM - 05:00 PM CEST

10:00 AM - 11:00 AM EST

DRONE INSPECTION WEBINAR SERIES

—WEBINAR 5 OF 6—

**PRESENTED IN PARTNERSHIP
WITH MFE**



MODERATOR



Zacc Dukowitz
Content Marketing Manager
—Flyability—

PANELISTS



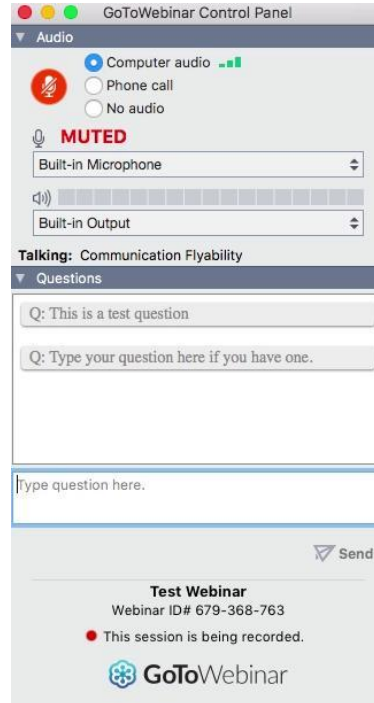
Dustin Waller
Senior UAS Analyst
—Occidental Petroleum—



Danny Landry
VP Of Business Development
& Marketing
—Premium Inspection &
Testing—

WEBINAR ENGAGEMENT


Ask questions during the webinar.



The image shows a screenshot of the GoToWebinar Control Panel. It features a 'Audio' section with radio buttons for 'Computer audio' (selected), 'Phone call', and 'No audio'. Below this is a 'MUTED' status indicator and a dropdown menu for 'Built-in Microphone'. A volume slider is also present. The 'Talking: Communication Flyability' section is followed by a 'Questions' section with two input fields: 'Q: This is a test question' and 'Q: Type your question here if you have one.' Below these is a larger text area with the placeholder 'Type question here.' and a 'Send' button. At the bottom, it says 'Test Webinar', 'Webinar ID# 679-368-763', and 'This session is being recorded.' with the GoToWebinar logo.


GoToWebinar Control Panel

Audio



☒ Computer audio 

☐ Phone call

☐ No audio

 **MUTED**

Built-in Microphone

Built-in Output


Talking: Communication Flyability

Questions


Q: This is a test question


Q: Type your question here if you have one.

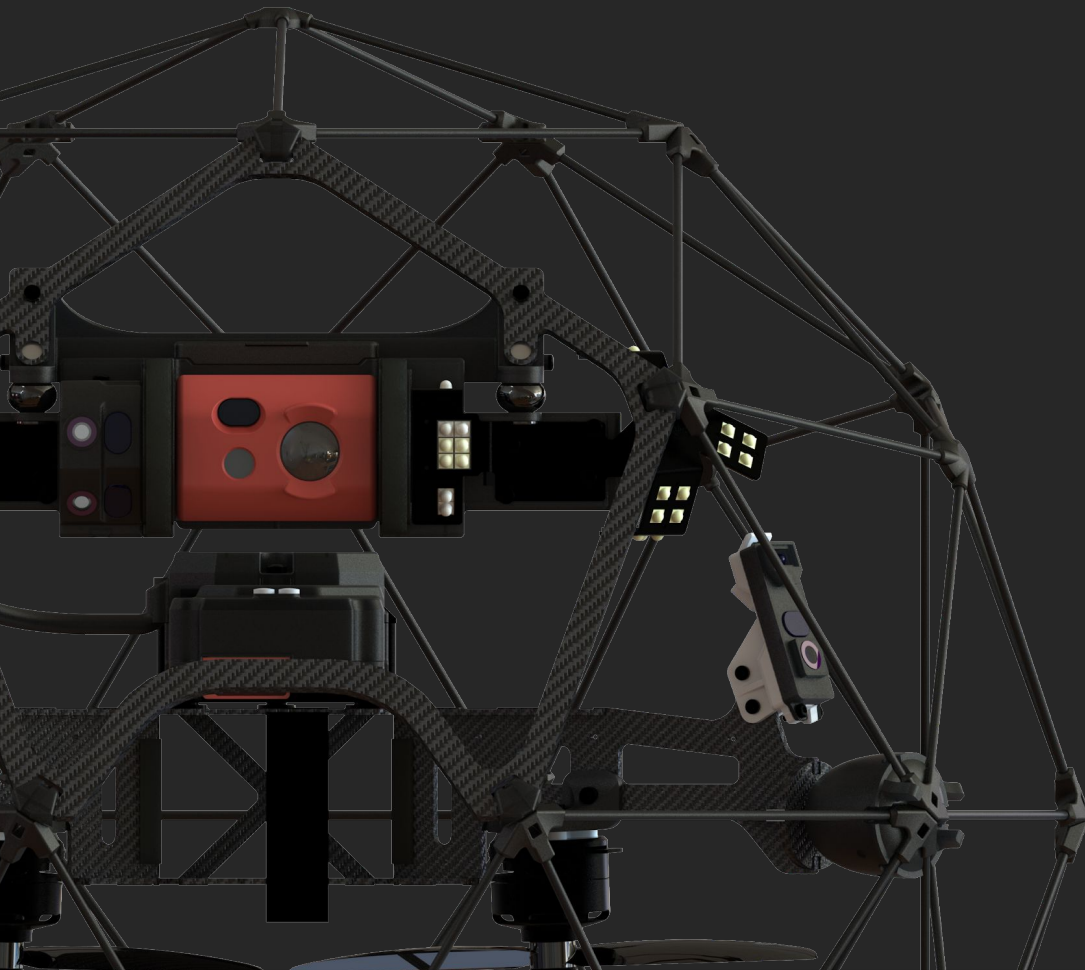
Type question here.

 Send

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AGENDA



- 1 5' Introduction
2. 25' Dustin Waller, Occidental Petroleum
Drone inspections: How to manage data for all stakeholders involved—an end user's perspective
3. 25' Danny Landry, Premium Inspections & Testing
Drone inspections: How to manage data for all stakeholders involved—an inspection service provider's perspective
4. 20' Q&A
Audience questions answered live



Drone Inspections: How to Manage Data for All Stakeholders Involved—An End User's Perspective

Dustin Waller
Senior UAS Analyst





Oxy UAS Program Overview

Legacy Anadarko

- 2016: Began flying (FAA Part 107)
- 2016-2017: Slowly began integrating drones into the field for special projects
- 2018: Anadarko Drone Team formally created
- 2018-2019: Built internal flight management systems and data workflows
- 2019: ~40 certified drone pilots & 30 drones

Legacy Oxy

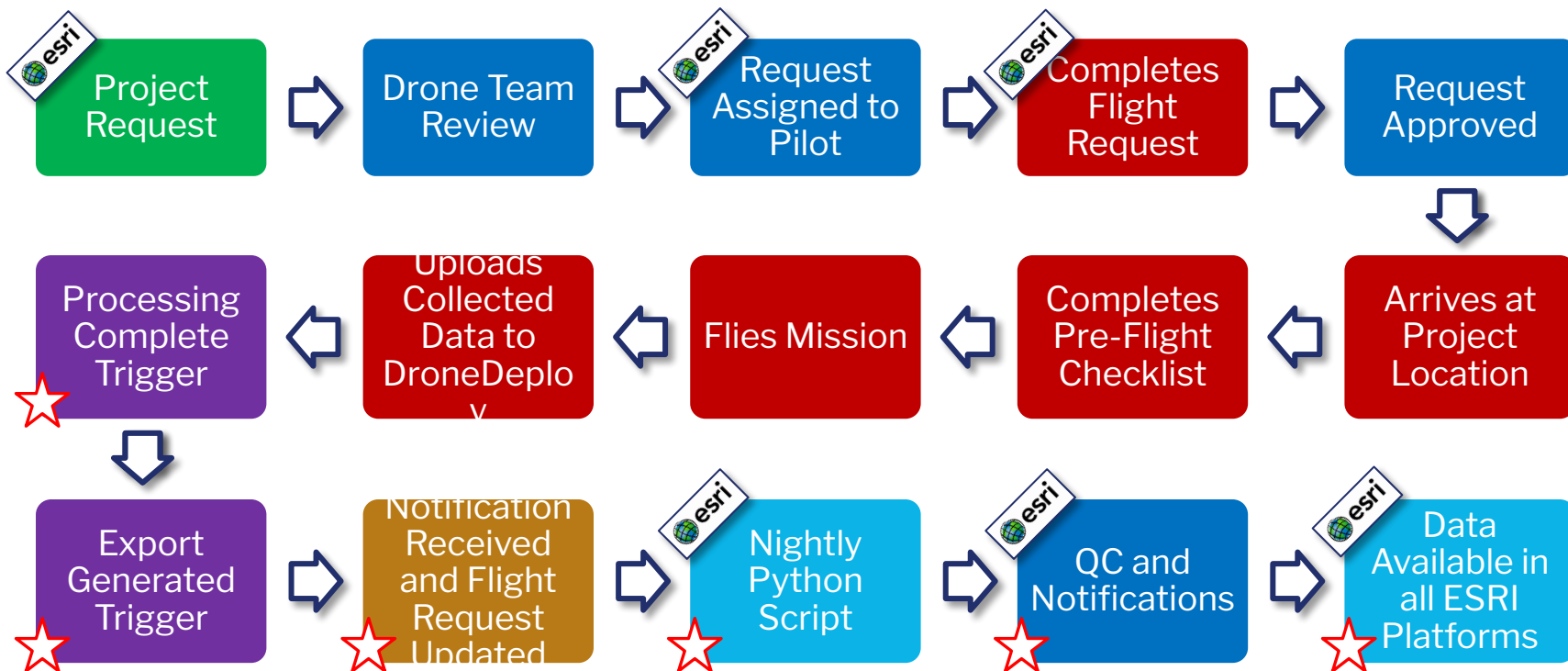
- 2016: Began flying (FAA Part 107)
- 2016-2018: Slowly began integrating drones into the field for special projects
- 2019: Oxy Drone Team formally created
- 2019: ~20 certified drone pilots & 20 drones in the field

2019: Oxy
acquires
Anadarko

Post Acquisition Oxy (2020+)

- 44 Current/Proposed Pilots
- 47 Operational Drones
- > 1,000 flights flown
- > 44,000 acres mapped
- Internal Training Program
- Fully Automated Data Workflow
- Internal Project and Flight Management Systems
- DroneDeploy API Integration

Process Workflow



All
Employees

Drone
Team

Drone
Pilot

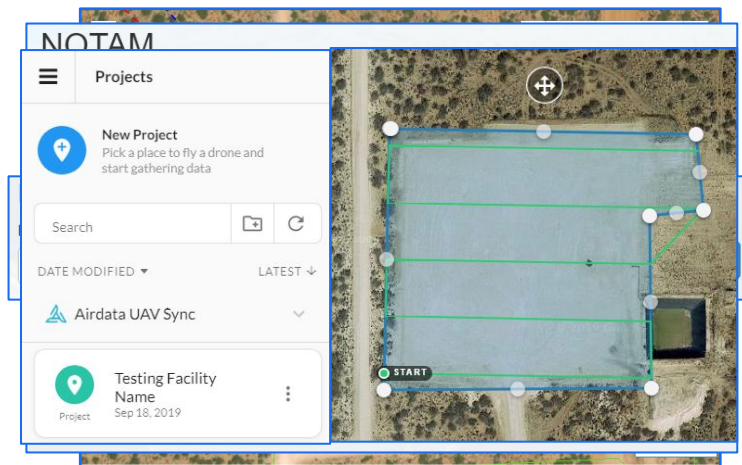
DroneDeploy
API

Office
365

Pyth
on

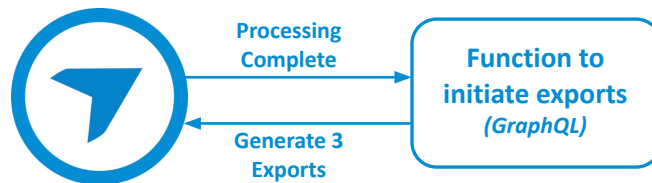
Key Features

- ArcGIS JS API 4.x
- Feature services from Portal and FAA ArcGIS Online
- Facility Name lookup using SAP service
- Facility Location (lat/lon) auto populated by SAP, GIS Facility Search, or mouse click
- Automatic NOTAM info population
- Automatic Flight Request Approval (based on conditions built into form)
- DroneDeploy Project/Map Template creation based on type of flight
- WMTS layer of all historical drone imagery



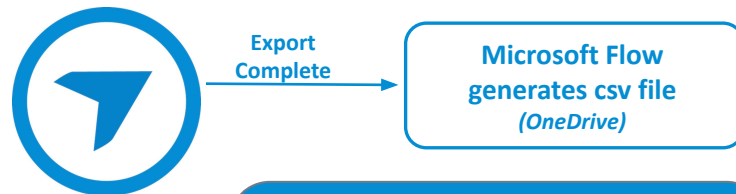
MapPlan: Complete

- Fires once the map has completed processing
- Initiates the export creation for the Orthomosaic, DTM, and Plant Health.



Export: Complete

- Fires once each export has been generated
- Initiates the creation of the csv file in Microsoft Flow



CSV File

Name:

- ProjectName_MapPlanID_datetime

Contains:

- | | |
|------------------|--------------|
| • DownloadURL | • AssetArea |
| • FlightReqID | • FlightType |
| • RequestorEmail | • ProjLatLng |
| • ExportType | |

ArcPy

Script runs every night at 10pm performing the following steps:

- Downloads and exports processed zip files to archive folder
- Downloads all photos, panoramic images, and videos and stores in SharePoint Document Library
- Generates point features representing the downloaded media and adds attribution to each (date, facility name, type, link, flight request ID)
- Generates PDF of imagery and a direct link to Portal
- Notifies the Drone team that a new project has been completed and a quick QC of the data is performed
- Once verified, a notification email is sent to initial requestor with PDF, link to Portal, and project information




Portal for ArcGIS



- WMTS Layer coming directly from DroneDeploy
- Point Feature Class containing all additional media information
- Available to entire company
- Operations Dashboard to manage special projects (flare inspection, power pole, etc...)
- Project specific web maps displaying contours, DTMs, vegetation analysis, etc...




SharePoint Online



- Flight Request contains various project attribute information
- DroneDeploy information like project specific web tile layer URL, DroneDeploy project ID, direct ortho download path, etc...
- Drone Data Library pulls all "Completed" projects from SharePoint Flight Request list and displays in a searchable table that is connected to an ArcGIS JS Map. Each project has the ortho, DTM, vegetation data, Panos, single images, PDF, videos, and project information

 **Drone Data Library**

Verified 
Unverified 



Search: Show entries

Facility	Collected	BU	Flight Type
 	01/08/2021	Permian Resources - NM	QIP,







☒ Orthomosaic

☐ Vegetation

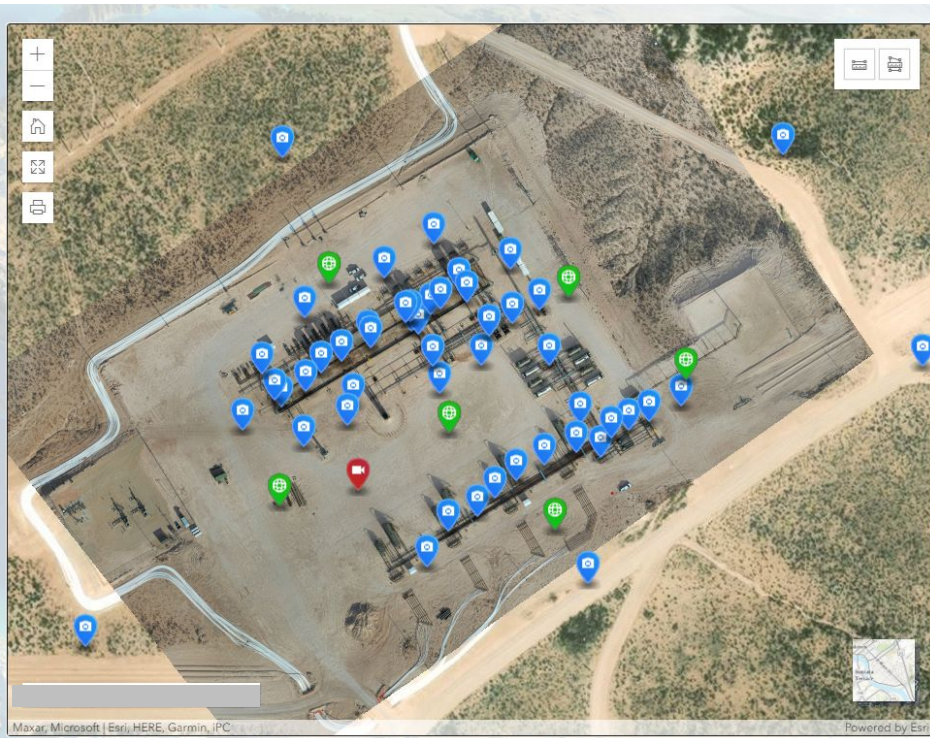
☐ Elevation

☒ Media Markers

Video 1 | Video 2 | [Flare Inspection](#) | [Processing Equipment Inspection](#) |

Showing 1 to 1 of 1 entries (filtered from 640 total entries) Previous 1 Next



Imagery Comparison Tool

+ Iguana Satellite - Imagery

- ☐ 11/20/2020
- ☐ 12/03/2020
- ☐ 11/04/2020
- ☐ 08/05/2020
- ☒ 10/01/2020
- ☐ 10/13/2020
- ☒ 01/05/2021
- ☐ 08/12/2020
- ☐ 08/20/2020

+ Iguana Satellite - Vegetation

☒ 01/05/2021

Permian Resources - Midland/Iguana Satellite - Imagery

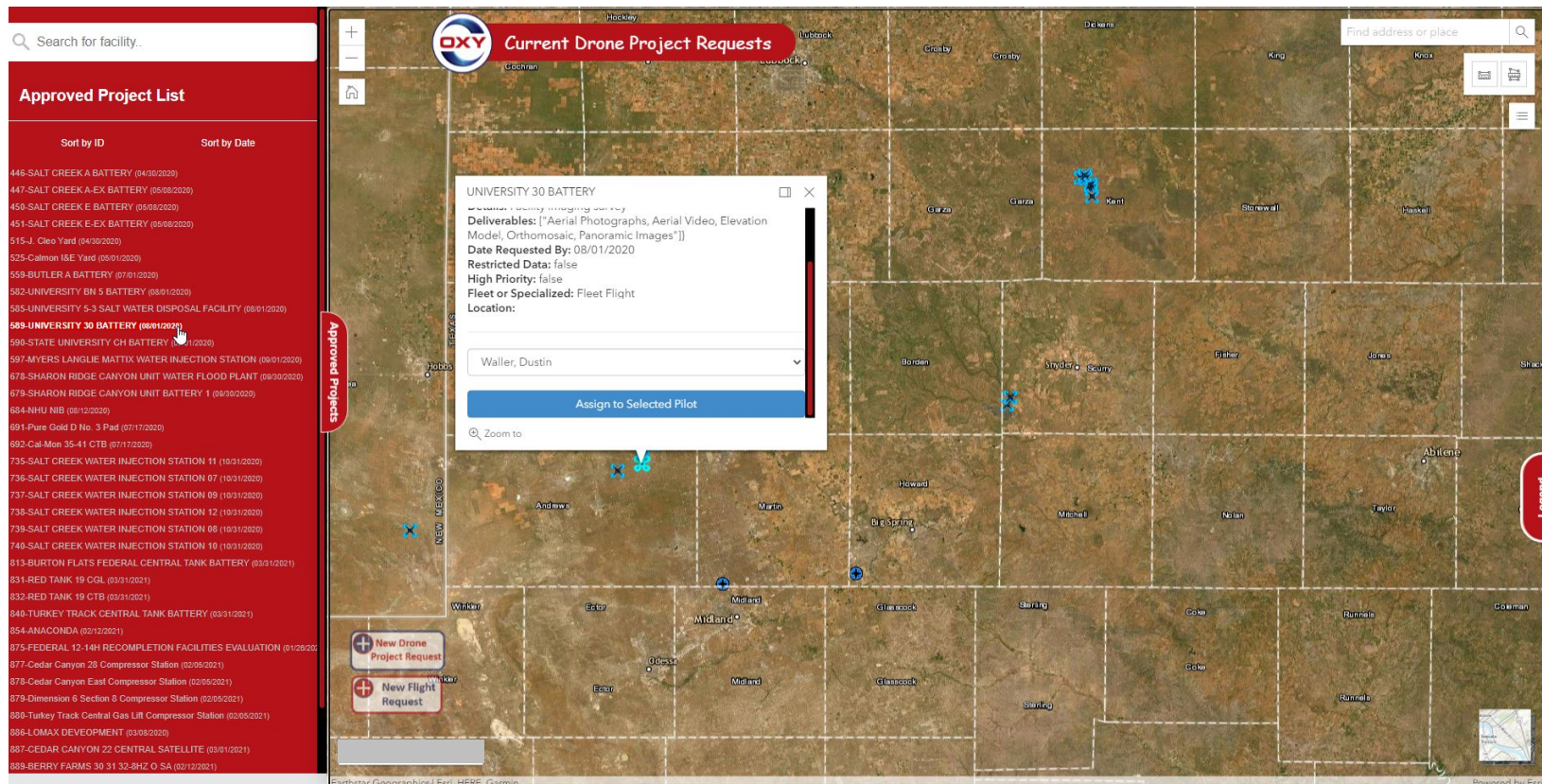
☒ 10/01/2020

Permian Resources - Midland/Iguana Satellite - Imagery

01/05/2021

10/01/2020







Drone Inspections: How to Manage Data for All Stakeholders Involved—An Inspection Service Provider's Perspective

Danny Landry
VP Of Business Development & Marketing



Drone Data Workflow

- **Data Management as a Contractor**
 - Data security is #1 priority
 - Value of data
- **Data Collection**
- **Data Delivery**



Data Workflow – Sample Customer #1



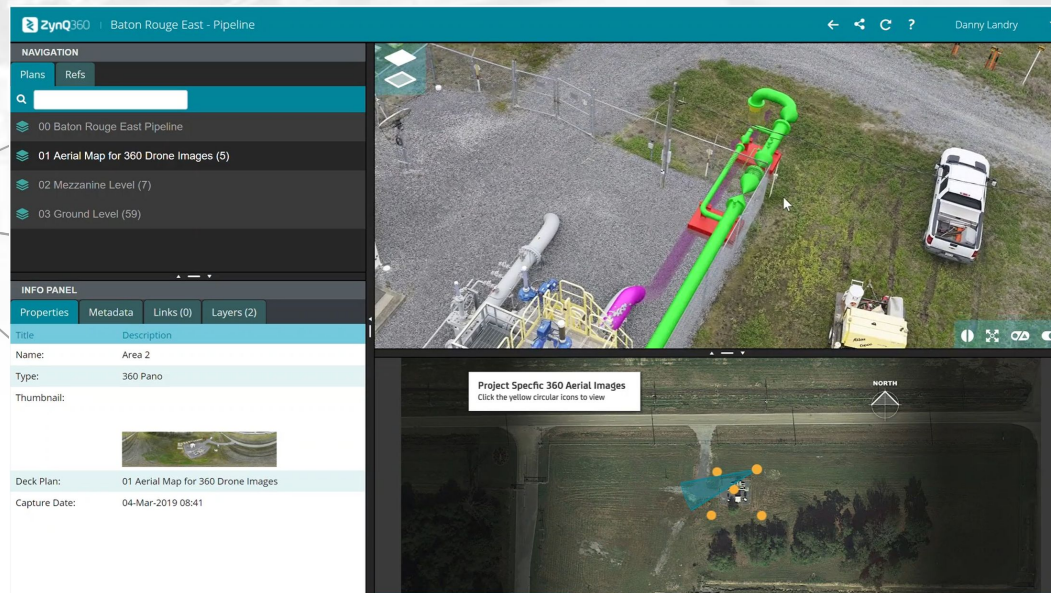
- **Midstream Customer**

- **Data Collection**

- Project basis – individual scopes
 - Mapping of pump station assets
 - 360 Imagery collection

- **Data Delivery**

- Upload to ZynQ360 portal
- Deliver to client for consumption



Data Workflow – Sample Customer #2

- **Utility Customer**

- **Data Collection**

- Specific to procedure/scope
 - ROW Vegetation
 - Comprehensive
 - Storm Response
- Data naming system
 - Simple but critical

- **Data Delivery**

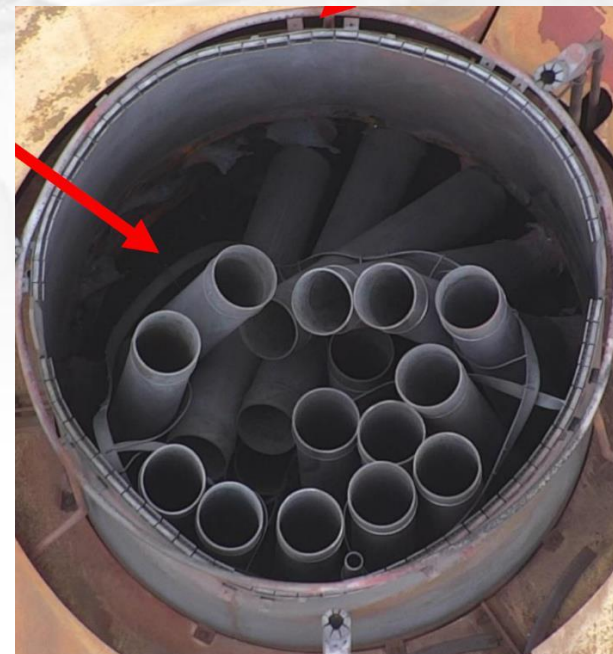
- Upload to customer portal
- Back up secondary copy on in-house server



Data Workflow – Sample Customer #3

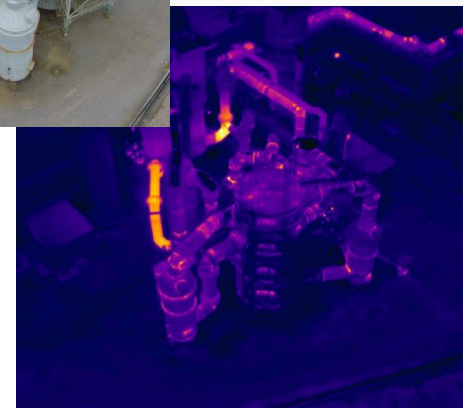


- **Refinery Customer**
- **Data Collection**
 - Emergency flare outage
 - Focus on quick actionable data
- **Data Delivery**
 - API inspector builds out PDF report and provides recommendations



Data Workflow – Sample Customer #4

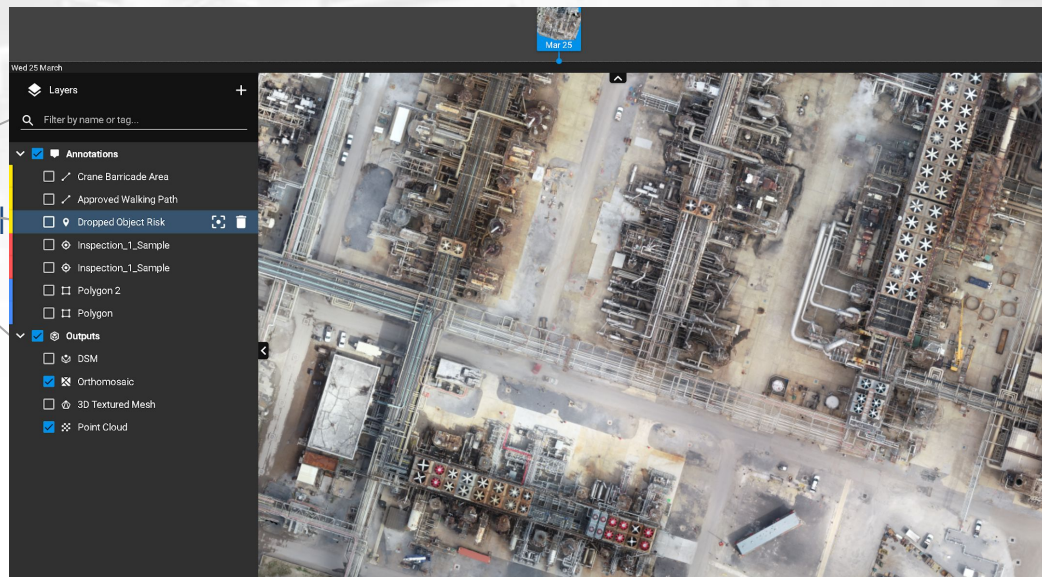
- **Refinery Customer Infrared**
- **Data Collection**
 - Inspector requests inspection
- **Data Delivery**
 - Data is collected and uploaded into customer GAVIS portal



Data Workflow – Sample Customer #5



- **Major Capital Project - Greenfield**
- **Data Collection**
 - Mapping and 3D modeling of the site
 - Customer has the goal of visualizing change through a cloud-based portal
- **Data Delivery**
 - Data is collected, processed and delivered through the Pix4D Platform



Data Workflow – Sample Customer #6



- **Refinery Customer – Post-Storm**

- **Data Collection**

- Mapping and External Close Visual Inspection of 100% of the Refinery following major hurricane
- Documentation of post storm conditions

- **Data Delivery**

- Data is delivered with a hybrid approach; real time through live stream, hard drive delivery daily and through Zynq360 system



DRONE INSPECTIONS WEBINAR SERIES

—PRESENTED BY FLYABILITY AND MFE—

Thursday, February 11

10:00 AM EST / 4:00 PM CEST

Webinar 1 of 6—The Benefits of Drone Inspections: How Inspectors Are Using Drones to Improve Safety and Save Millions

- Joe Grelewicz, Middough, Inc.
- Mike Vanovermeir, MFE Rentals

Thursday, February 25

10:00 AM EST / 4:00 PM CEST

Webinar 2 of 6—Drone Inspections: Insourcing vs. Outsourcing Your Drone Inspection Program

- Nick Hardwood, MISTRAS Group, Inc.
- Zacc Dukowitz, Flyability

Thursday, March 18

10:00 AM EST / 4:00 PM CEST

Webinar 3 of 6—Indoor Drone Inspections: Case Studies & Best Practices from the Field

- Nick Hardwood, MISTRAS Group, Inc.
- Zacc Dukowitz, Flyability

Thursday, April 1

10:00 AM EST / 4:00 PM CEST

Webinar 4 of 6—Outdoor Drone Inspections: Case Studies & Best Practices from the Field

- Courtland Penk, Osprey Integrity, Ltd.
- Zacc Dukowitz, Flyability

UPCOMING WEBINARS

Thursday, April 29

10:00 AM EST / 4:00 PM CEST

Webinar 6 of 6—Drone Inspections: The Importance of Data Localization

- Simon Kumm, InspecDrone
- Geoffroy le Pivain, Flyability

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MFE Mexico

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Need drone inspection services in the U.S.?

Get in touch with Danny.

Send an email to DLandry@pitinc.com



- Include scope of work (as possible)
- General consultations for inspection work also available
- Feel free to email with questions about the presentation!

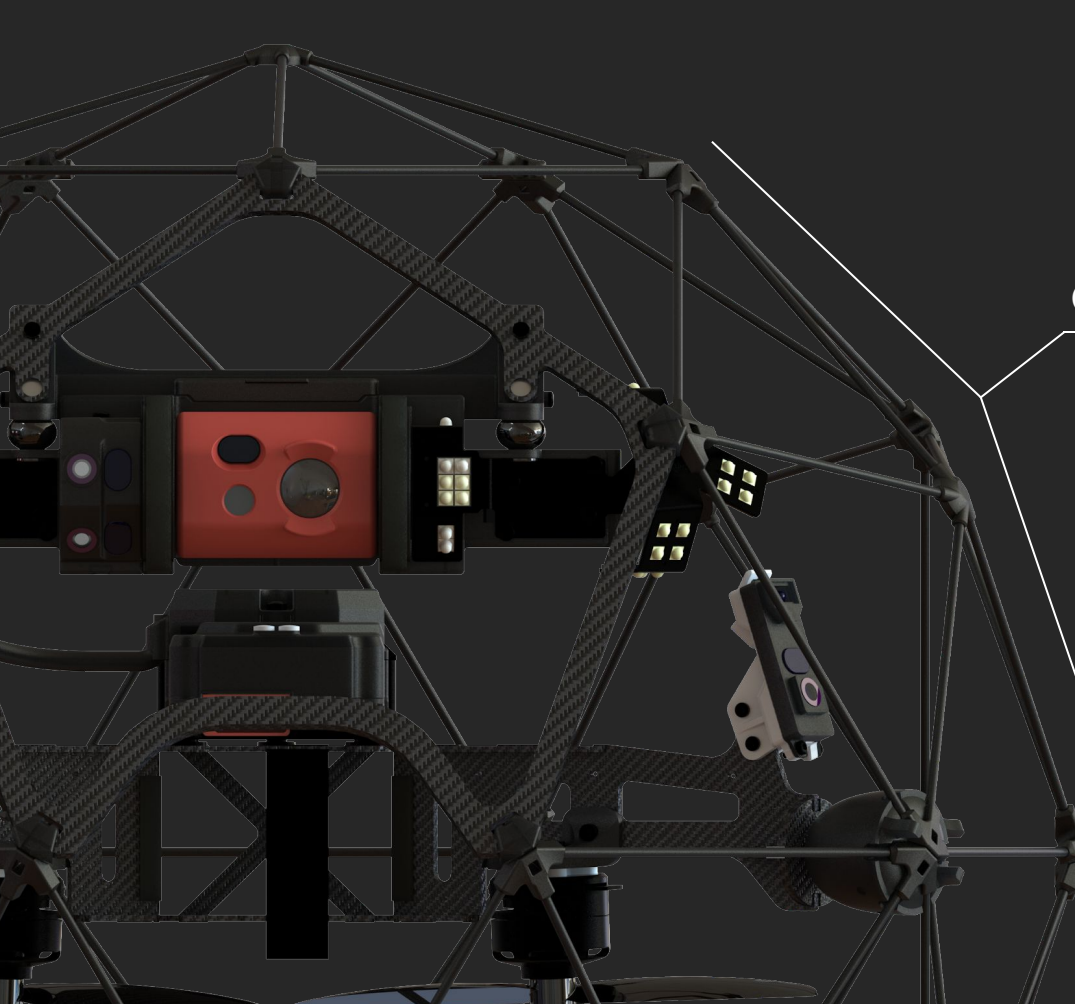


Danny Landry

Premium Inspection & Testing

VP Of Business Development & Marketing





Q&A

Send your follow-up questions to:

Dustin Waller, Occidental Petroleum—
Dustin_Waller@oxy.com

Danny Landry, Premium Inspection & Testing—
DLandry@pitinc.com

Johan Mlouka, Flyability—
johan.mlouka@flyability.com

Zacc Dukowitz, Flyability—
zacc.dukowitz@flyability.com