BENEFITS OF USING DRONES FOR DESIGN, CONSTRUCTION MANAGEMENT, AND OPERATION OF OILFIELD WATER INFRASTRUCTURE

BY: JAMES DANIEL ARTHUR JR.

INTERNATIONAL PETROLEUM ENVIRONMENTAL CONFERENCE
DRONE APPLICATIONS

• Applications: Drones provide a level of detail and efficiency that would otherwise be unmatched

• Rules and Regulations: Commercial Drone Pilot Certification Part 107 - Small Unmanned Aircraft

• Field applications:
  • Site Assessments & Area of Reviews
  • Existing infrastructure, WOUS, & Wetlands
  • Construction Oversight & Field Operations
  • Safety Management & Maintenance
RULES AND REGULATIONS

• Commercial drone pilots are licensed by the Federal Aviation Administration under Part 107: Small Unmanned Aircraft Regulation

• Basic Rules of flight:
  • Must complete the FAA Remote Pilot Certification Exam
  • Must register the unmanned aircraft and have registration markings visible
  • Allowed to fly in Class G Airspace (0-1,200’)
RULES OF FLIGHT

• Must communicate operations with local airports when communication towers are manned

• Permitted to fly 400’ above surface level & less than 100 mph

• Must maintain visual line of sight

• Only permitted to fly over people directly involved in drone operations

• Limited to daylight operations without an exemption

• Drone must weigh less than 55 lbs.

• Must renew Remote Pilot certification every 2 years
SITE ASSESSMENT & AREA OF REVIEWS

• Site mapping/Aerial pictures
  • Drones provide an inexpensive way to gather detailed information about a site that was previously unavailable
  • No Helicopter needed

• Increase mapping detail, and elimination of possible errors during a site evaluation
  • Existing Infrastructure
  • Water wells
  • Pipelines
  • Steams & Wetlands
SITE ASSESSMENT & AREA OF REVIEWS

• Drones provide an increased access to site:
  • Provide the ability to assess areas that would be difficult, or impossible, for a worker to access.
    • (Ex. Neighboring properties, impassible wetland areas, rivers, swamps, brush, elevated surfaces.)
  • An increase in access during a site assessment leads to a more thorough understanding of the site allowing the operator to eliminate unforeseen issues.
CONSTRUCTION OVERSIGHT & FIELD OPERATIONS

• Ability to better convey how a construction project is progressing
  • Allows for better management of resources

• Allows for constant oversight without interrupting operations
  • Heavy machinery; multiple moving parts

• Ability to monitor sites quickly allowing limited personnel to monitor multiple sites
  • Multiple, or large sites
  • Stretches of pipeline installation
CONSTRUCTION OVERSIGHT & FIELD OPERATIONS

• Ability to access damage, or repairs, of possibly dangerous areas before introducing a worker into the situation
  • Elevated surfaces on drilling rigs, or tank batteries
  • Confined spaces
  • Near rivers, or impoundments
SAFETY MANAGEMENT & MAINTENANCE

• Provide a simpler, inexpensive way to conduct maintenance inspections of water infrastructure: (Impoundments, Tank batteries, containments)
  • Weathered, or warping, berms
  • Weather damage to pits, or other infrastructure equipment

• Decrease safety risks for oversight & construction personnel while on the job site
  • Ability to remove the human element from a potential dangerous situation.

• Tank Batteries

© 2018 ALL CONSULTING
SUMMARY

• Unmatched level of detail and efficiency
• Commercial Drone Pilot Certification: Small Unmanned Aircraft (Drone) - Part 107
• Site Assessment
  • Existing infrastructure, WOUS, & Wetlands
  • Safely monitor & provide detailed description of project status
• Construction Oversight & Field Operations
• Safety Management & Maintenance
Contact Information

J. Daniel Arthur Jr.
Environmental Consultant

jdarthur5@all-llc.com
918-230-6274

www.all-llc.com

Citation: