DRONE DEPLOY AGRICULTURAL MAPPING



DASHBOARD – PROJECTS PAGE

CONTAINS ALL PROJECTS CREATED IN YOUR ACCOUNT

PREVIOUS PROJECTS ALREADY FLOWN AND/OR PROCESSED

PROJECTS CURRENTLY IN THE PLANNING STAGES

PROJECTS CREATED FOR FUTURE USE

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DASHBOARD – PROJECTS PAGE

THE QUICK ACCESS BAR LISTS RECENT PROJECTS CREATED OR RECENTLY MODIFIED.

BELOW THE QUICK ACCESS BAR LISTS ALL PROJECTS.

PROJECTS FOR A SPECIFIC CLIENT/FIELD CAN BE INTERMINGLED WITH OTHER CLIENT PROJECTS AND BECOME CLUTTERED AND UNORGANIZED.

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DASHBOARD – FOLDERS

MULTIPLE PROJECTS FOR A CLIENT/FIELD CAN BE PLACED IN A DEDICATED FOLDERS

THERE ARE THREE DUPLICATE PROJECTS CREATED FOR DICKMAN CORN 66A. THIS FIELD WILL BE MAPPED MULTIPLE TIMES THROUGH OUT THE GROWING SEASON.

PLACING THEM IN A DEDICATED FOLDER, AWAY FROM OTHER PROJECTS, WILL KEEP PROJECTS ORGANIZED AND EASY TO FIND

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DASHBOARD – FOLDERS

CLICKING ON THE FOLDER BUTTON BRINGS UP A NEW WINDOW ALLOWING YOU TO CREATE AND NAME A NEW FOLDER

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DASHBOARD – FOLDERS

CLICKING ON THE FOLDER BUTTON BRINGS UP A NEW WINDOW ALLOWING YOU TO CREATE AND NAME A NEW FOLDER

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DASHBOARD – FOLDERS

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ALL THE DICKMAN CORN PROJECTS CAN NO BE PLACED INTO THE NEWLY CREATED FOLDER



DASHBOARD – FOLDERS

CLICK ON THE THREE DOTS IN THE LOWER RIGHT CORNER OF THE PROJECT THEN SELECT MOVE TO FOLDER

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DASHBOARD – FOLDERS

SELECT THE FOLDER FROM THE LIST OF OPTIONS AND CLICK MOVE

DUPLICATE THIS PROCESS FOR ALL PROJECTS YOU WANT IN THIS SPECIFIC FOLDER

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DASHBOARD – FOLDERS

AFTER ALL THE PROJECTS HAVE BEEN MOVED TO THE FOLDER, THE DASHBOARD NO LONGER SHOWS THE PROJECTS FOR THE DICKMAN CORN FIELD

WE RECOMMEND CREATING FOLDERS FOR ALL YOUR CLIENTS/FIELDS TO KEEP YOUR DASHBOARD LESS CLUTTERED AND PROJECTS ORGANIZED

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DASHBOARD – FOLDERS

THE DICKMAN CORN 66A FOLDER IS OPEN AND SHOWS THE PROJECTS TO BE FLOWN DURING THE GROWING SEASON.

IF YOU HAVE A CLIENT WITH MULTIPLE FIELDS TO BE FLOWN MULTIPLE TIMES DURING THE SEASON, YOU CAN CREATE SUB-FOLDERS FOR EACH FIELD

CLICK ON THE FOLDER BUTTON WITHIN THE MAIN FOLDER TO CREATE THE SUB-FOLDER.

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DASHBOARD – SUB FOLDERS

THE CLIENT ADDED A SOYBEAN FIELD TO BE MAPPED ALONG WITH THE CORN FIELD.

I CHANGED THE NAME OF THE MAIN FOLDER TO A CLIENT NAME AND CREATED TWO SUB FOLDERS FOR EACH OF THE FIELDS.

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DASHBOARD – FOLDERS

YOU CAN SHARE YOUR FOLDERS WITH OTHERS BUT THEY NEED TO HAVE A DRONE DEPLOY ACCOUNT AS WELL.

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MISSION PLANNING

FROM THE DASHBOARD, CREATE A NEW PROJECT

Walkthrough Closeout Ex...

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MISSION PLANNING

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A "CREATE PROJECT" PROMPT APPEARS OVER A VISIBLE SATELLITE LAYER.

THE SATELLITE LAYER IS CENTERED OVER YOUR CURRENT LOCATION OR THE LOCATION OF YOUR ISP DEPENDING ON THE LOCATION SETTINGS ON YOUR COMPUTER.

DISABLING "YOUR LOCATION" ON YOUR COMPUTER WILL SHOW A FULL VIEW OF THE WORLD AND YOU WILL HAVE TO ZOOM IN



MISSION PLANNING

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MAP PLANNING LAYOUT:

WHITE SOLID DOTS – REPRESENT ESTABLISHED CORNERS OF YOUR MAP

THEY CAN BE MOVED BY CLICK, HOLD AND DRAG.

THEY CAN BE DELETED BY A QUICK CLICK AND RELEASE



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MAP PLANNING LAYOUT:

GRAY "+" DOTS – REPRESENTS LOCATIONS WHERE CORNERS CAN BE ADDED.

MANY FIELDS ARE NOT SQUARE OR RECTANGULAR SO MAPS MUST BE MODIFIED TO INCLUDE AREAS THAT BRANCH OUT FROM THE MAIN FIELD

CLICKING, HOLDING AND DRAGGING A "+" DOT WILL CHANGE IT WHITE AND BECOME PART OF AN ESTABLISHED CORNER OF YOUR MAP



MISSION PLANNING

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MAP PLANNING LAYOUT:

THE BLACK CIRCLE WITH FOUR WHITE ARROWS INSIDE ALLOWS YOU TO MOVE THE ENTIRE MAP, IN ITS CURRENT CONFIGURATION, TO ANOTHER LOCATION.

CENTERING THE MAP INSIDE THE FIELD AT THE BEGINNING REDUCES HOW FAR YOU HAVE TO MOVE CORNERS WHEN ESTABLISHING FIELD BOUNDARIES



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MISSION PLANNING

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ESTABLISHING MAPPING BOUNDARIES:

ZOOM OUT SO THE ENTIRE FIELD IS VISIBLE ON YOUR **COMPUTER SCREEN**

MOVE YOUR WHITE DOTS TO THE CORNERS OF THE MAIN AREA OF THE FIELD TO BE MAPPED.

DO NOT WORRY ABOUT PRECISE PLACEMENT OF THE WHITE DOTS AT THIS POINT. WE WILL ZOOM IN LATER **AND MAKE MORE PRECISE PLACEMENTS**.

MISSION PLANNING

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ESTABLISHING MAPPING BOUNDARIES:

IF THIS IS A NEW FIELD OR A LOCATION YOU HAVE NEVER BEEN TO BEFORE, IT IS IMPORTANT TO GET ACCURATE PROPERTY BOUNDARD INFORMATION FROM THE OWNER OR FARMER BEFOREHAND

YOU CAN SCOUT THE FIELD WITH THE FARMER TO VERIFY BOUNDARIES OR A PRINTED GOOGLE MAP WITH FIELD BOUNDARY LINES WOULD BE BEST



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ESTABLISHING MAPPING BOUNDARIES:

AS SOON AS YOUR FOUR CORNERS ARE ESTABLISHED, DRONE DEPLOY PROVIDES SOME VERY VALUABLE FLIGHT DATA

APPROXIMATE FLIGHT TIME ACREAGE BATTERIES NEEDED

THESE ARE INITIAL DATA FIGURES. SINCE ADDITIONAL FIELD BOUNDARIES NEED TO BE ESTABLISHED AND OTHER FLIGHT PARAMETERS SET, THESE FIGURES WILL CHANGE



MISSION PLANNING

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ESTABLISHING MAPPING BOUNDARIES:

WITH ADDITIONAL CORNER POINTS, OUR FIELD BOUNDARIES ARE MORE CLOSELY ESTABLISHED.

OUR FLIGHT DATA HAS ALSO CHANGED SLIGHTLY

NOTICE THE FLIGHT TIME HAS INCREASED BUT THE ACREAGE DECREASED, WHY?

ENHANCED 3D IS ACTIVATED

DRONE DEPLOY WEB BASED MISSION PLANNING PLATFORM



ESTABLISHING MAPPING BOUNDARIES:

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WITH ENHANCED 3D **ACTIVATED, THE AIRCRAFT** WILL FLY AROUND THE **ENTIRE BOUNDARD TAKING OBLIQUE IMAGES.**

OBLIQUE IMAGES- CAMERA IS SET TO 75 OR 80 DEGREES (ANGLED UP SLIGHTLY) SO THAT MORE DETAILED VERTICLE DATA CAN BE RETRIEVED

YOU CAN SEE A GREEN LINE (FLIGHT PATH) AROUND THE **ENTIRE BOUNDARD OF THE FIELD**



MISSION PLANNING

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ESTABLISHING PRECISE BOUNDARIES:

ZOOM IN AND MAKE PRECISION LOCATION ADJUSTMENTS TO YOUR CORNERS.

MAKE SURE YOUR WHITE BOUNDARY LINES ARE JUST OUTSIDE THE AREA YOU WANT TO MAP, NOT ON THE LINE.

IT'S BETTER TO BE A LITTLE OVER THAN ON OR INSIDE THE BOUNDARD LINES.



MISSION PLANNING

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ESTABLISHING PRECISE BOUNDARIES:

THE GREEN LINES ARE THE FLIGHT PATH, MAKE SURE YOUR FLIGHT PATHS ARE NOT OVER OTHER PROPERTY

RED ARROWS INDICATE THE FLIGHT PATH COULD BE OFF THE PROPERTY

I COULD MOVE THE WHITE LINE CLOSER TO THE BOUNDARY OR REMEMBER TO MAKE A FLIGHT PARAMETER ADJUSTMENT LATER.



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ESTABLISHING PRECISE BOUNDARIES:

THE IMPORTANCE OF HAVING ACCURATE PROPERTY BOUNDARD INFORMATION IS CRITICAL TO NOT ONLY MAKING SURE THE FIELD IS ACCURATELY MAPPED BUT ALSO MAKING SURE DATA IS NOT COLLECTED OF SOMEONE ELSE'S PROPERTY.

THIS FIELD HAS A VERY UNUSUAL BOUNDARY THAT THE SATELLITE MAP DOES NOT SHOW. DO NOT RELY SOLELY ON THE SATELLITE OVERLAY

THE FARMER RECENTLY SOLD 2 ACRES TO THE HOME OWNER TO THE WEST WHICH DIDN'T EXTEND SOUTH TO THE EXISTING PROPERTY LINE. SATELLITE IMAGE WAS TAKEN WHEN FARMER STILL OWNED IT.



MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

NOW THAT THE MAP PLAN IS ACCURATELY LAYED OUT, OUR FLIGHT DATA IS BECOMING MORE ACCURATE

NOW WE ADJUST OUR FLIGHT PARAMETERS AND FLIGHT PATHS

SAFETY AND EFFICIENCY ARE MAJOR FACTORS IN ADJUSTING FLIGHT PARAMETERS



MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

THE FIRST PARAMETER TO ADJUST IS ALTITUDE

THE FLIGHT ALTITUDE CAN MAKE THE GREATEST CHANGES TO OUR FLIGHT TIMES AND EQUIPMENT REQUIREMENTS



MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

DRONE DEPLOY DEFAULTS TO 200 FEET

DETERMINING THE PROPER FLIGHT ALTITUDE DEPENDS ON SEVERAL FACTORS:

-PURPOSE OF MISSION -WEATHER -OTHER PROPERTY

DRONE DEPLOY WEB BASED



MISSION PLANNING

SETTING FLIGHT PARAMETERS:

DRONE DEPLOY DEFAULTS TO 200 FEET

PURPOSE OF MISSION

FLYING THE PHANTOM 4 PRO (20 MEGAPIXEL CAMERA) AT 400 FEET AGL (FAA MAXIMUM ALTITUDE) WILL PROVIDE ALL THE DATA YOU NEED FOR AGRICULTURAL PURPOSES WITH THE EXCEPTION OF CROP COUNT MISSIONS

CROP COUNTING SHOULD BE FLOWN AT 200-250 FEET FOR HIGHER RESOLUTION





MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

WEATHER

VISIBILITY AND WINDS ARE FACTORS TO INCLUDE WHEN DETERMINING FLIGHT ALTITUDE

SLANT ANGLE VISIBILITY LOCATION OF THE SUN WINDS ALOFT

400 FEET MAY CREATE A SAFETY AND OR IMAGE QUALITY ISSUE FOR THE MISSION

DRONE DEPLOY WEB BASED



MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

WEATHER

SLANT ANGLE VISIBILITY

SINCE 99% OF DRONE DEPLOYS 2D ORTHO MISSIONS USE NADIR CAMERA SETTINGS, SLANT ANGLE VISIBILITY IS ONLY AN ISSUE IF THE SUN IS ANGLED TO RELECT OFF THE GROUND AND DIRECTLY INTO THE CAMERA LENS

VERY LITTLE, IF ANY, DIFFERENCE IN SLANT ANGLE BETWEEN 200 AND 400 FEET



MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

WEATHER

WINDS ALOFT

TEMPERATURE INVERSIONS, APPROACHING FRONTAL BOUNDARIES, THUNDERSTORMS

THESE WEATHER CONDITIONS CAN AFFECT WINDS DIFFERENTLY AT DIFFERENT ALTITUDES



MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

OTHER PROPERTY

MAKE SURE YOU TALK WITH THE FARMER REGARDING NEIGHBORS ALONG THE FIELD.

ARE THERE BAD ISSUES OR PROBLEMS TO BE AWARE OF



MISSION PLANNING

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SETTING FLIGHT PARAMETERS:

LET'S TAKE A LOOK AT DIFFERENCES IN FLIGHT TIME, IMAGES TAKEN, AND BATTERIES REQUIRED FOR FLIGHTS AT 200 FEET AND 400 FEET

> WHY SUCH A BIG DIFFERENCE?

+ DRONE DEPLOY WEB BASED.ISSION PLANNING PLATFORM SETTING FLIGHT PARAMETERS:



400 FEET

200 FEET

LOOK AT THE DIFFERENCES IN THE SPACE BETWEEN FLIGHT PATHS AT 200 AND 400 FEET

THE CAMERA HAS A LARGER FIELD OF VIEW AT 400 FEET

THE OVERLAP AND SIDELAP REQUIREMENTS DO NOT NEED IMAGES TO BE AS CLOSE SO THE PATHS ARE FARTHER APART

FEWER PATHS: LESS FLIGHT TIME, FEWER IMAGES, FEWER BATTERIES



MISSION PLANNING

FLIGHT PARAMETERS:

NOTICE THE FLIGHT PATH OVER THE NEIGHBORS PROPERTY

IT WENT FROM JUST ALONG THE EDGE OF THE PROPERTY AT 200 FEET TO ALMOST FLYING OVER THE HOUSE AT 400 FEET

WE CAN CHANGE OTHER FLIGHT OPTIONS IN THE ADVANCED SECTION TO ELIMINATE OR ALTER THE FLIGHT PATH OVER THE NEIGHBORS PROPERTY



400 FEET

200 FEET



FLIGHT PARAMETERS:

MISSION PLANNING

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ADVANCED SETTINGS: -IMAGE OVERLAP -FLIGHT DIRECTION -FLIGHT SPEED -STARTING POINT -GIMBAL ANGLE -ADDITIONAL AUTO SETTINGS

+ DRONE DEPLOY WEB BASEDmission Planning PLATFORM



ADVANCED SETTINGS: IMAGE OVERLAP:

2D ORTHOMASIAC MAPS, THE MINIMUM RECOMMENDED OVERLAP: 75% FRONT OVERLAP 65% SIDE OVERLAP

IMAGE PROCESSING ALGORITHMS COMBINE GPS COORDINATES EMBEDDED IN EACH IMAGE WITH SPECIFIC POINTS/PIXEL PATTERNS COMMON IN ADJACENT IMAGES TO CORRECTLY STITCH THEM TOGETHER

DRONE DEPLOY WEB BASED MISSION PLANNING PLATFORM



FLIGHT PARAMETERS: **ADVANCED SETTINGS: IMAGE OVERLAP:**

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MANY FIELD DO NOT HAVE **DISTINCTIVE AREAS OR** SPOTS THAT THE **ALGORITHM CAN PICKUP ON WHICH CAN CAUSE** GAPS IN THE FINAL MAP RESULTS

AS CROPS GROW, WINDS CAN CAUSE SWAYING AND AFFECT THE FINAL RESULTS. INCREASE OVERLAP WITH FULLY GROWN CROPS



MISSION PLANNING

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FLIGHT PARAMETERS: ADVANCED SETTINGS: IMAGE OVERLAP:

HIGHER IMAGE OVERLAP REDUCES/ELIMINATES MAPPING GAPS CAUSED BY IMAGE CAPTURE ERRORS.

HIGH WINDS, GUSTY WINDS, SLOW MEMORY CARD OR AIRCRAFT PROCESSOR CAN CAUSE SKIPS OR LARGE GAPS BETWEEN IMAGES

THE BLUE DOTS ARE IMAGE CAPTURE LOCATIONS TAKEN DURING FLIGHT



MISSION PLANNING FLIGHT PARAMETERS: ADVANCED SETTINGS:

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3D CROSSHATCH INCREASES FLIGHT TIME

CAN INTRODUCE ADDITIONAL FLIGHT PATHS OVER NEIGHBORING PROPERTY



MISSION PLANNING FLIGHT PARAMETERS: ADVANCED SETTINGS: FLIGHT DIRECTION:

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A CHANGE OF LESS THAN 1 DEGREE MOVED THE FLIGHT PATHS OUT OF NEIGHBORING PROPERTY



MISSION PLANNING

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FLIGHT PARAMETERS: ADVANCED SETTINGS: STARTING WAYPOINT:

DETERMINING THE FLIGHT STARTING POINT IS AN IMPORTANT SAFETY CONSIDERATION

THIS SHOULD BE PART OF YOUR PRE-FLIGHT PLANNING FOR UNEXPECTED, UNUSUAL, OR EMERGENCY SITUATIONS



MISSION PLANNING FLIGHT PARAMETERS: ADVANCED SETTINGS: STARTING WAYPOINT:

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WIND DIRECTION AND SPEED WILL DETERMINE TAKE-OFF AND LANDING LOCATION AND MISSION STARTING POINT



MISSION PLANNING FLIGHT PARAMETERS: ADVANCED SETTINGS: STARTING WAYPOINT:

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THE CURRENT CHECK OF AWOS AT THE AIRPORT 4 MILES AWAY:

04006KT 10SM CLR 26/16 A3012 RMK A02

WINDS AT 400 FEET COULD BE: 02014KT



MISSION PLANNING FLIGHT PARAMETERS: ADVANCED SETTINGS: STARTING WAYPOINT:

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ALWAYS PLAN YOUR MISSION TO START UPWIND AND YOUR TAKEOFF/LANDING LOCATION DOWNWIND



MISSION PLANNING

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FLIGHT PARAMETERS: ADVANCED SETTINGS: STARTING WAYPOINT:

TWO REASONS: LOSS OF GPS OR RC SIGNAL AND THE AIRCRAFT WILL DRIFT TOWARD YOU

SECOND- IF THE BATTERY IS NEARLY DEPLETED AT OR NEAR THE END OF THE MISSION, THE AIRCRAFT DOESN'T HAVE TO GO VERY FAR TO LAND



MISSION PLANNING

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FLIGHT PARAMETERS: ADVANCED SETTINGS: STARTING WAYPOINT:

WHEN SELECTING A TAKEOFF/LANDING SPOT, IDEAL LOCATIONS MAY NOT BE ACCESSIBLE AND MAY INVOLVE TRESPASSING

CHECK WITH THE FARMER IF DIRT ROADS OR DRIVEWAYS ARE ACCESSIBLE OR ARE ON PRIVATE PROPERTY



MISSION PLANNING FLIGHT PARAMETERS: ADVANCED SETTINGS: ALL DJI GO OPTIONS ARE

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AUTO SETTINGS. IF YOU WANT TO ADJUST SETTINGS MANUALLY, TOGGLE THE OPTIONS "ON" AND MAKE CAMERA ADJUSTMENT IN THE DJI GO 4 APP



MISSION PLANNING

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EVERY FLIGHT WILL HAVE DIFFERENT FACTORS THAT AFFECT DECISION MAKING

TOPICS COVERED HERE ARE COMMON FOR ALL MISSIONS BUT DO NOT INCLUDE EVERY OPTIONS OR FACTOR THAT MAY COME INTO PLAY DURING A FLIGHT



MISSION PLANNING

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ADJUSTMENTS TO SETTINGS ARE AUTOMATICALLY SAVED IN DRONE DEPLOY

THERE IS NO "SAVE" OR "SAVE AS" STEP

GO BACK TO THE DASHBOARD TO ACCESS THE PROJECT

ALL PREVIOUS MODIFICATIONS ARE SAVED



DRONE DEPLOY MISSION PLANNING QUIZ

QUIZ QUESTIONS:

- AS SOON AS YOUR FIELD BOUNDARY AREA IS FINALIZED YOU CAN NOT CHANGE THE TOTAL
 FLIGHT TIME FOR THE MISSION? FALSE
- ALL MISSIONS SHOULD BE FLOWN AT 400 FEET? FALSE
- WHAT ARE THE RECOMMENDED FRONT AND SIDE IMAGE OVERLAP PERCENTAGES? 75% FRONT AND 65% SIDE
- ENABLING THE PERIMETER 3D FEATURE DOES NOT INCREASE TOTAL FLIGHT TIME? FALSE
- THE SETTINGS FOR THE ONBOARD UAS CAMERA SHOULD BE SET IN THE DJI GO 4 APP OR IN DRONE DEPLOY? DRONE DEPLOY AUTO SETTINGS SHOULD BE USED
- WHEN SHOULD YOU CONSIDER USING CROSSHATCH 3D? IN WINDY CONDITIONS WHEN CROPS ARE AT THEIR TALLEST.
- WHAT DOES NADIR MEAN? THE CAMERA IS POINTED STRAIGHT DOWN 90 DEGREES
- WHAT IS AN OBLIQUE IMAGE? IMAGES CAPTURED WITH THE CAMERA POINTED DOWN 70-85
 DEGREES
- WHAT DETAIL IMPROVES ON A DRONE DEPLOY MAP WHEN USING OBLIQUE CAMERA SETTINGS? VERTICLE DETAIL ON A 3D MAP
- WHAT ARE TWO CRITICAL FACTORS IN DETERMINING YOUR MISSION STARTING POINT AND YOUR TAKE-OFF/LANDING LOCATION? WIND SPEED & DIRECTION AND NEIGHBORING PROPERTIES-TRESPASS ISSUES