



InfraGard Arcadiana Meeting



Drone Threat(s) of on the Lower Mississippi River and the Outer Continental Shelf



CERTAIN

EXPECTED

PROBABLE

POSSIBLE

NOT EXPECTED

Drone Threats

Drone I & W

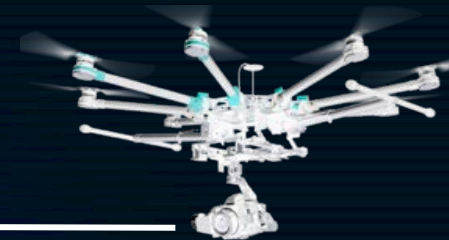
Counter-UAS

Lower Mississippi River

Outer Continental Shelf

Counter Drone Technology





Drone Threats



Malicious Purposes



ISIS Propaganda Threats Continue

ISIS Shrinking Caliphate; Last Stand in Syria

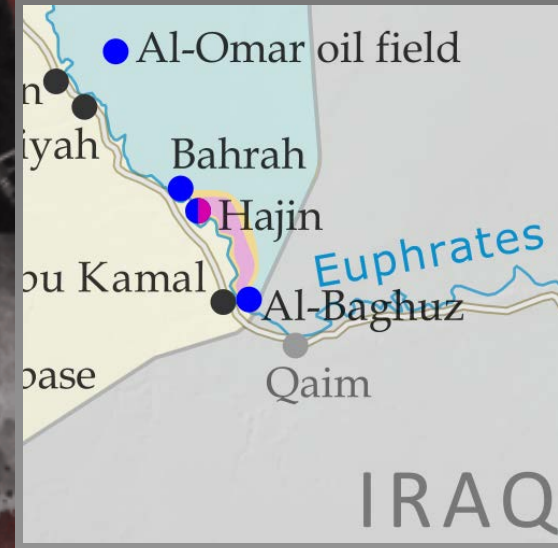
ISIS-Affiliated-Groups



Commercial Drone

Published Late September 2018

AWAIT FOR OUR SURPRISES

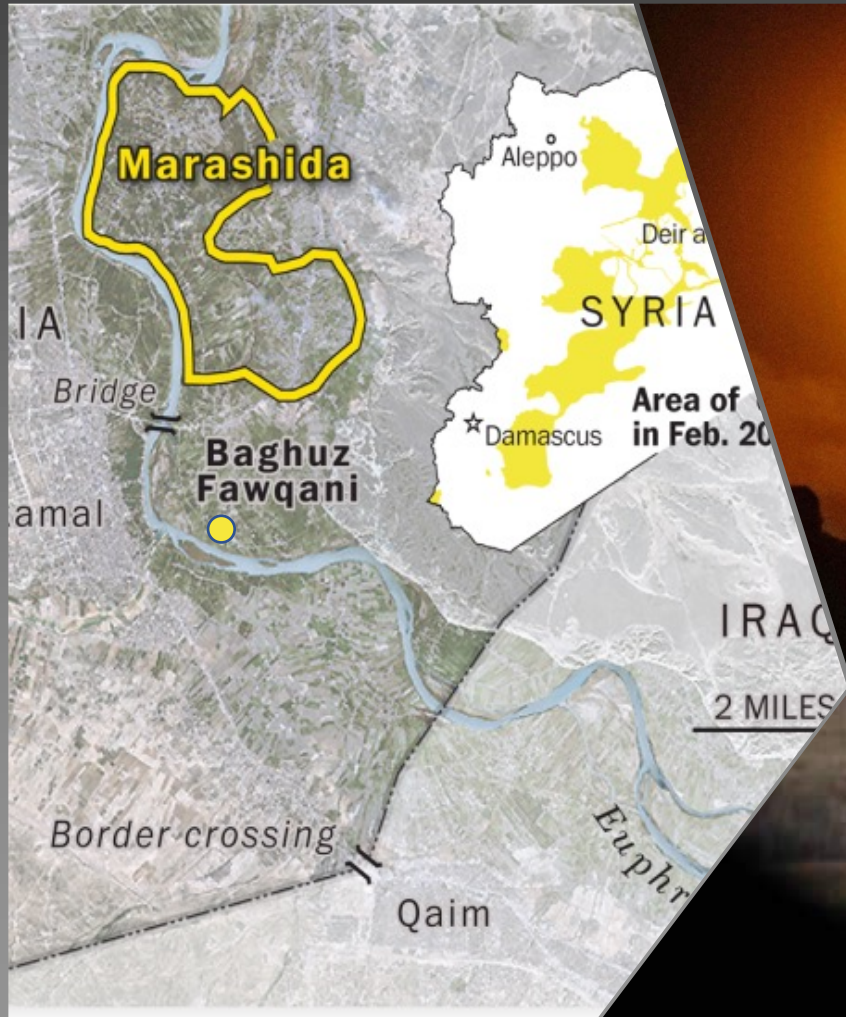


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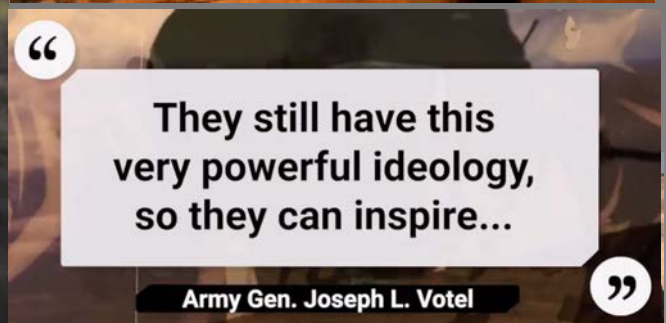


Reverting to Insurgency Tactics After the Caliphate

Over 100,000 surrendered between Hajin and Baghouz 20% were Men



Is this the end of ISIS?



“ They still have this very powerful ideology, so they can inspire... ”

Army Gen. Joseph L. Votel



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SRI LANKA: SITES OF EXPLOSIONS

8:45 am
Negombo
St Sebastian's
Church

9:05 am
Batticaloa
Zion Church

Colombo
Six sites

8:45 am
Kingsbury Hotel

8:45 am
Cinnamon Grand
Hotel

8:45 am
Shangri-La
Hotel

8:45 am
St Anthony's
Shrine

2:15 pm
Dematagoda

1:45 pm
(Near) Dehiwala
Zoo

Source: News Reports
NEWS creative



253 Killed



ISIS Extensive Use of Commercial Drones

Improvised Attack Drones in Syria & Iraq



٤ جمادى الآخرة ١٤٣٦

عاجل / إسقاط طائرة مسيرة للبيشمركة المرتدة في سنجار



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ISIS Upping Drone Battlefield Technology

Skywalker 8X Delta Wing Adapted to drop small bombs



In Less Than 2 Years ISIS was able to Developed a High Level of TTPs integration into the Battle Field



الدولة الإسلامية
خلافة على منهاج النبوة
هيئة التصنيع والتطوير العسكري
الفرادى الاتصالات المركزية
الجهة المستلمة: ولاية الأنبار

| ملاحظات | المرادف | العدد | نوع البضاعة ومواصفاتها | القيمة الاجمالية |
|--------------|---------|-------|------------------------|--------------------|
| | | 5 | X8 | 1076.3 |
| | | 4 | charger I MAX | 104.88 |
| | | 3 | C.C.D camera | 82.23 |
| | | 5 | Autopilot | 1000.00 |
| | | 6 | 3s battery 5000 | 232.38 |
| | | 2 | motor (red) | |
| | | 3 | X 3525 motor | 156 |
| | | 5 | Rmiler receiver | 569.05 |
| | | 5 | 3s battery 1300 | |
| | | 5 | Esc 60A | 260 |
| | | 14 | Servo Corona | 120.4 |
| | | 2 | propeller 14 X 9.5 | |
| | | 2 | v.transmitter | |
| | | 2 | v. receiver | |
| | | 11 | XT 60 | 6.248 |
| | | 30 | Gold connector | 8.19 |
| | | 10 | Extension wire | 8.56 |
| المجموع فقط: | | | | 2623.238 |

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Car Bomb Mosul Iraq ISIS Highpoint

ISIS Conducting a Drone Coordinated Attack



ISIS BOMBLETS



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ISIS Teaching the Next Generation

Fighters Learning How to Convert Drones Into Flying IEDs



DJI Phantom Drone

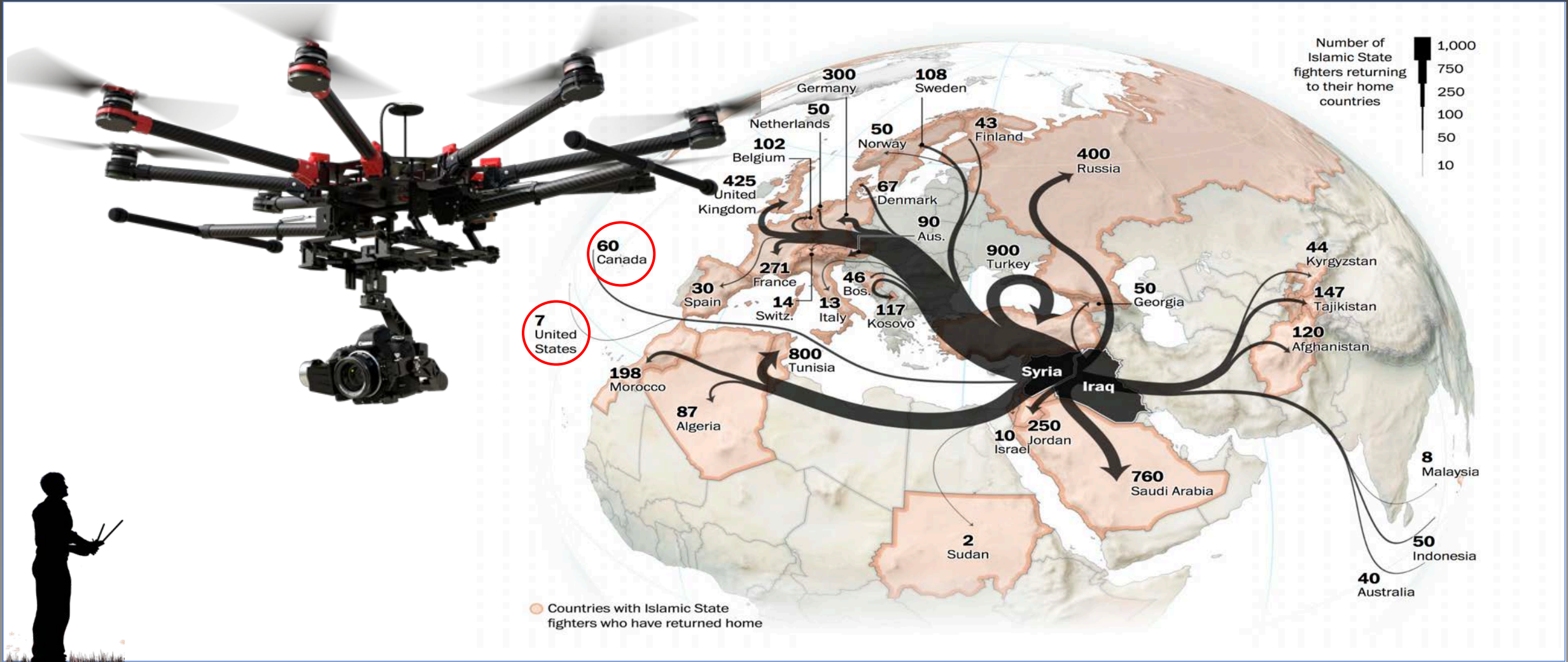


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ISIS Trained Drone Operators

Knowledge, Skills, Ability Determination to Act; Threat of the Returnees



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Interpol Trying to Track 45K Jihadist Fighters

8 Countries in Europe are Collaborating to Tackle this Threat of returning Young Jihadist



The Jihadis Return

ISIS and the New Sunni Uprising

"Quite simply, the best Western reporter at work in Iraq today." —Seymour Morshe



PATRICK COCKBURN



Source: German interior ministry

800

German Islamists who have travelled to Syria and Iraq

270

Number who have returned to Germany

70

Number involved in fighting or received training

130

Number who died in Iraq and Syria

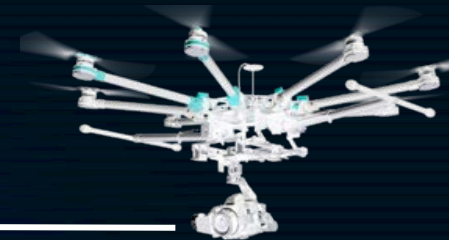
470

Number prepared to commit acts of terror in Germany

8,650

Number of Salafists in Germany

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Indications & Warnings (I&W)

Aerial Drones

An Accelerating Timeline





Drone Chemical Attack

Contaminated Sands Taken near Fukushima Daiichi Nuc Plant (2015)



April 2015



small amount of cesium

Landed on roof of Japan's Prime Minister Abe's Building

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Drug Cartel Caught With Drone IED

~ ½ Kilo of Explosives Attached
Cártel de Jalisco Nueva Generación (CJNG) operatives (Oct 2017)



~500 miles to Texas border



Back of SUV with AK-47 Assault Rifle



3DR SOLO Quad-Copter

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The 1st Combat Drone Swarm Attack

5 January 2018 Syrian Air Base & Naval Base with Russian Assets

Drone swarm in Syria

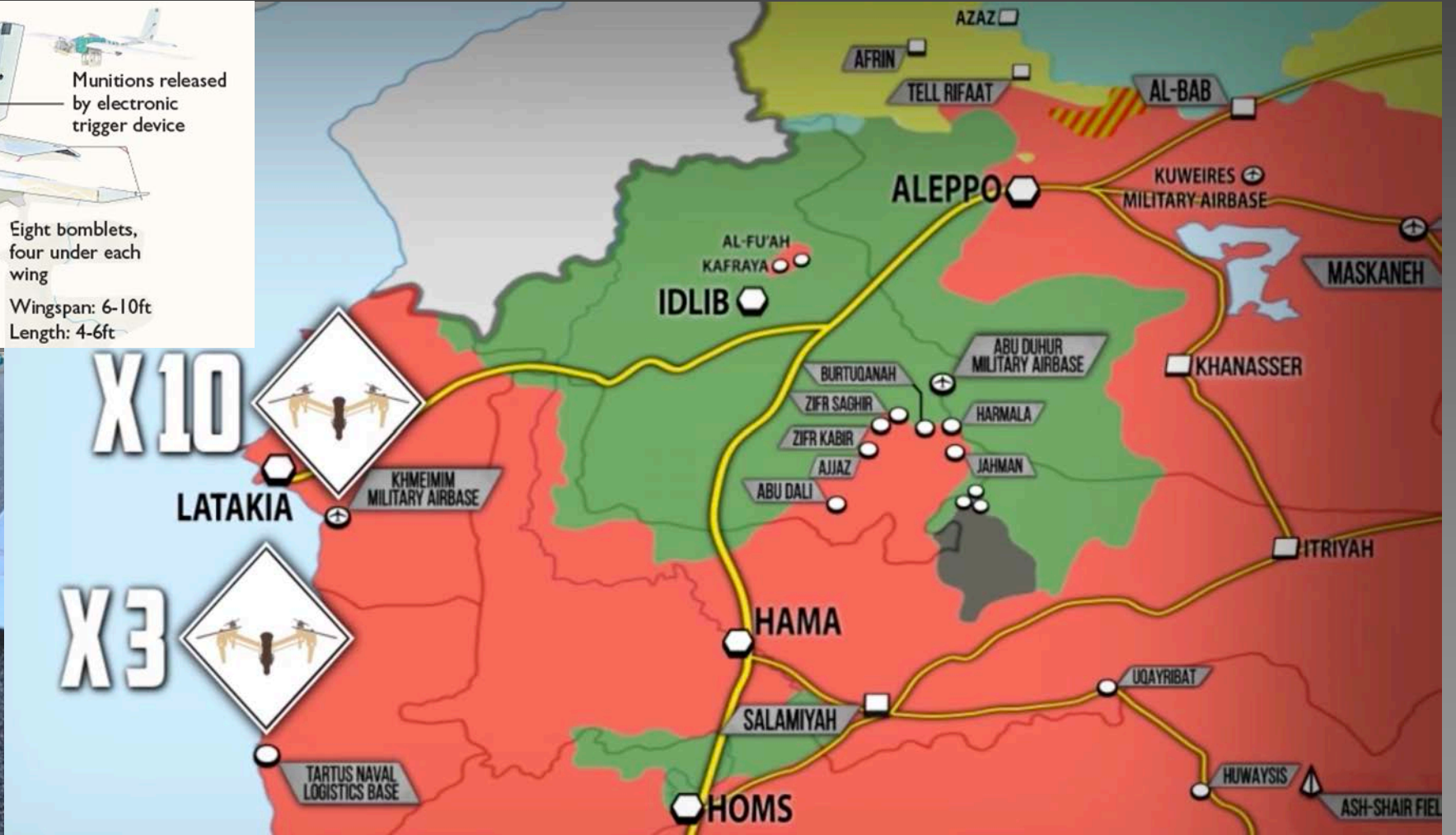
GPS or smartphone navigation system

Munitions released by electronic trigger device

Small aero engine

Eight bomblets, four under each wing

Wingspan: 6-10ft
Length: 4-6ft



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Venezuela President Maduro Drone Assassin Attack

Best Estimate 1 Kilo of Explosive
(04 Aug 2018)



M-600

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Found in a Tree Near the Ukraine/Russia Border

Home Brew Drone Smuggling Drugs Cigarettes and Weapons (Sep 2018)

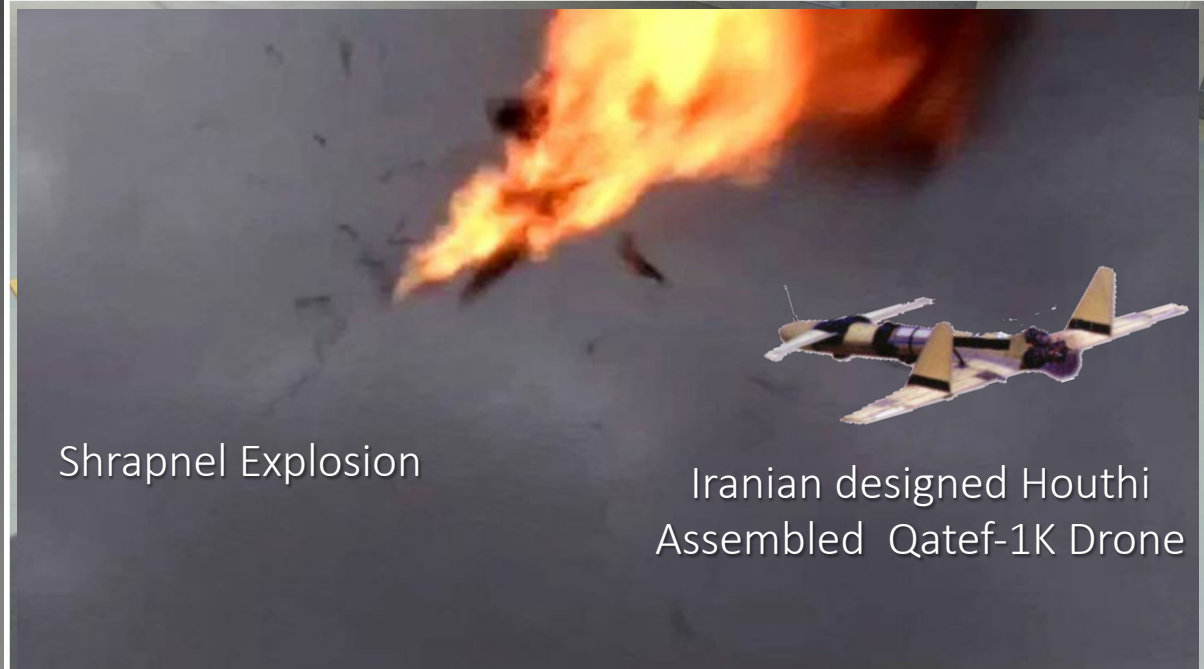


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Houthis' Drone Attack Yemeni Top Brass

Six Yemeni forces are Killed Gathered near the al-Anad Airbase (Jan 10th 2019)



Shrapnel Explosion

Iranian designed Houthi
Assembled Qatef-1K Drone

Flying autonomously along pre-programmed waypoints, and has a range of up to 150 km when carrying a 30-45kg warhead.



اللهم أحبر
الموت لأمریکا
الموت لإسرائيل
اللجنة على اليهود
الخطر للإسلام

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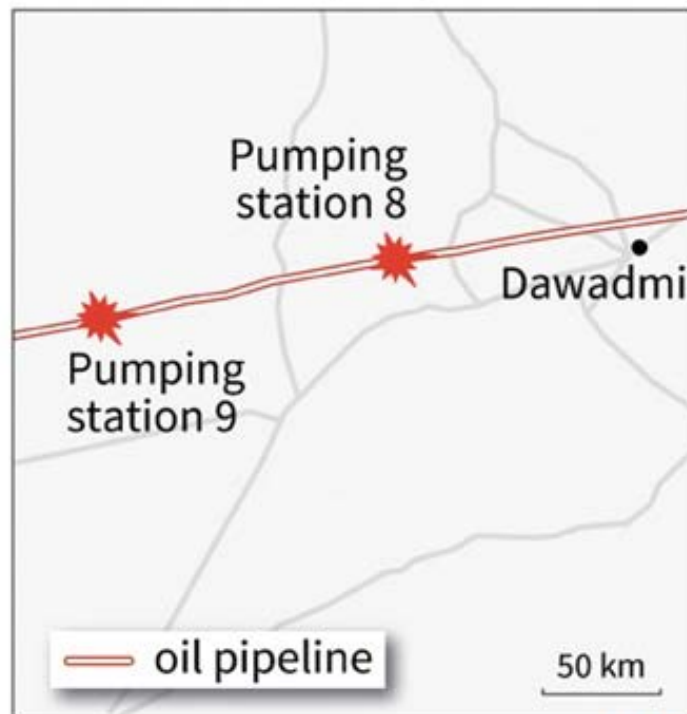


Houthi's Drone Attack Saudi Pipeline

Saudi Pipeline Carries 10% of Crude Export to Europe (May 14th 2019)

Drone attacks

Two Saudi oil pumping stations targeted, May 14



Sources: Aramco, US Energy Ministry

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Houthis' Drone Attack Saudi Airport

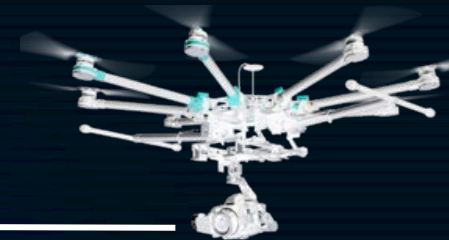
One Killed & 26 Civilians Injured/5th Attack on ABHA Airport (June 24th 2019)

Saudi's Abha Airport



- Houthi militias** launched a attack on Abha airport in southwest-ern Saudi Arabia
- The terrorist** attack wounded **26** civilians
- The injured** civilians included **three Saudi women** and two children
- The Arab** Coalition said it will hold the **Houthi militias** accountable
- The attack** proves that the **militia** had access to new special weapons
- The Arab** Coalition accused **Iran** of backing cross-bord-er terrorism

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Indications & Warnings (I&W)

Maritime Drones

An Accelerating Timeline



Iranian Revolutionary Guard Corps Navy Boat

Houti Militants Employ Iranian Ya Mahdi USVIED (Jan 30th 2017)



2 Killed 3 Injured

العربية
Al Arabiya

Saudi frigate Al-Madinah near



Tanker Attacked in the Red Sea May 2018

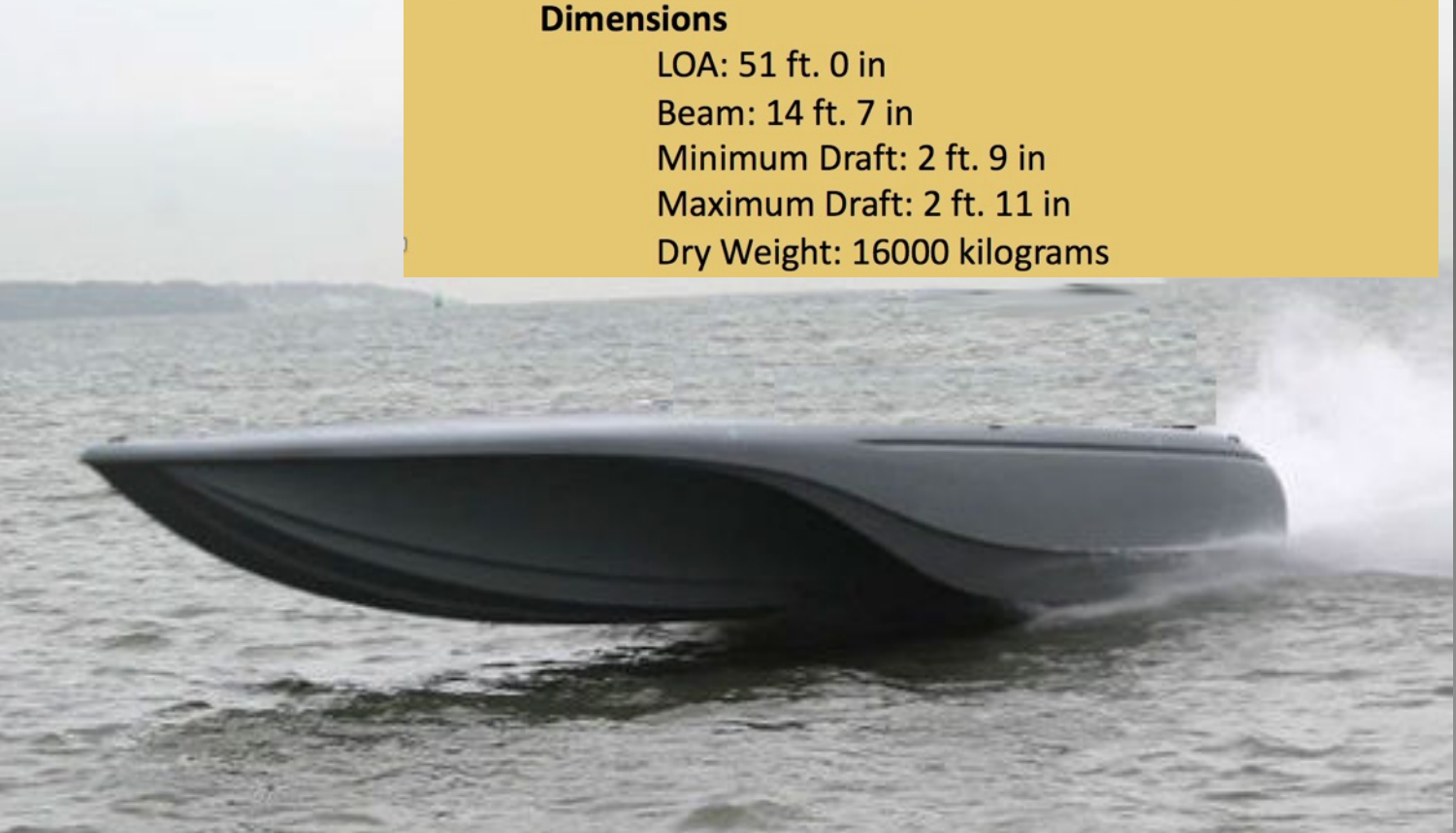
Over Horizon Attack

Specifications:

Speed: 72 knots (83mph)

Dimensions

- LOA: 51 ft. 0 in
- Beam: 14 ft. 7 in
- Minimum Draft: 2 ft. 9 in
- Maximum Draft: 2 ft. 11 in
- Dry Weight: 16000 kilograms



Three USVED Swarm Attack

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Houthi Ya Mahdi USVED Employed

Saudi Aramco Oil Depot & Distribution Stationed Attacked (Apr 2017)



USVIED Stopped 1.5 nm from Depot



UAS Drone Attack and Fire (Jul 2018)

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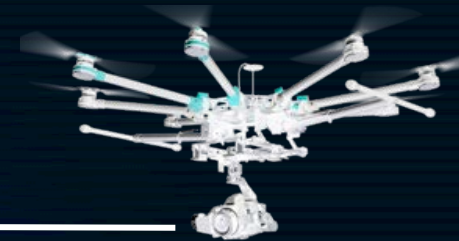
Houthi "Ya Mahdi" USVED Employed

UAE Minesweeper Sunk at Pier in Mokha Stationed Attacked (Jul 2018)



Based on the British Bladerunner 51 speed boat

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Notification of Drone Flights on the Lower Mississippi River



Critical
Infrastructure/USCG
Regulated Facilities



Mississippi River Critical Infrastructure

Vessel Crew Members Going to Sea with Their Drones



Increasing Threats



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In Our Backyard

Flying Over River Bulk Transfer Sites During Operations



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Randomly Flying over Facility Day & Night

Destrehan, LA Grain Loading Facility



DRONE THREAT



Drone Attack
Spraying
Dropping
Crashing into Cargo Hole

Drone Passed Over the Employees
heads at ~30ft.

NGO Environmental
Protestors.

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Worst Case Scenerio Levee Blowout

Donaldsonville Nitrogen Complex Loading Ammonium Nitrate



(A Texas City 1947 Challenge)

1. Iron oxide
2. Aluminum powder
3. Magnesium ribbon or thermite ignition mixture (a Sparkler will do)

THE CHEMISTRY OF SPARKLERS

METALLIC FUEL EJECTION OF BURNING METAL PRODUCES SPARKS

Magnesium Ignition Source

THE POWDERED METALS REACT WITH O₂ AND PRODUCE METAL OXIDES

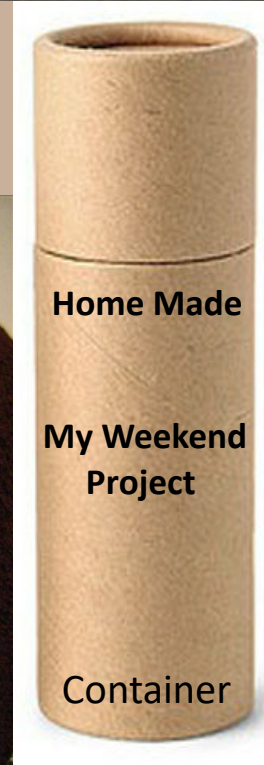
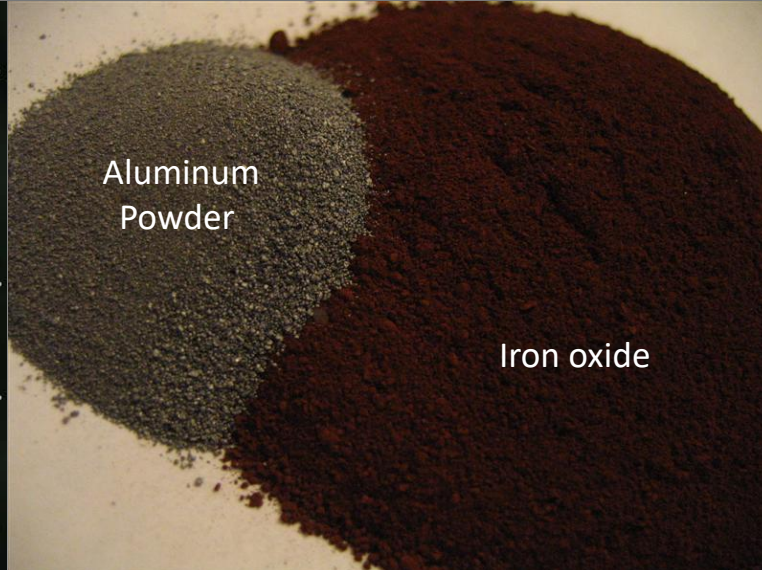
OXIDISERS PRODUCE OXYGEN TO BURN THE MIXTURE

NO₃⁻ Nitrate ClO₄⁻ Chlorate ClO₂⁻ Perchlorate

BINDERS HOLD MIXTURE TOGETHER

C6H12O6 Dextrin (common binder)

\$6.00/Pack



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USCG/INFRAGARD/AMSC/ FAA (2017)

Teamed together to reduce 90% of Erroneous NRC Unauthorized Drone Flights

Facility Security Officer (FSO) Working Group took the effort a step further by establishing a port wide communication network to track all UAS flights.



UNITED STATES COAST GUARD SECTOR NEW ORLEANS
MARINE SAFETY INFORMATION BULLETIN
Volume XVII Issue: 002 Time: 1600 Date: 09 Feb 2017

Unmanned Aerial Systems and Maritime Transportation Security Act Regulated Waterfront Facility Reporting Processes

The Sector New Orleans Captain of the Port (COTP) has identified an increase in the frequency of National Response Center (NRC) reports addressing Unmanned Aerial Systems (UAS) operating in airspace in the vicinity of and/or inside airspace directly above the property boundaries of Maritime Transportation Security Act (MTSA) regulated waterfront facilities in the New Orleans COTP Zone. Therefore, to reduce the frequency of erroneous or unverifiable NRC reports and to more efficiently employ investigative and law enforcement resources, it is recommended that the facility intending to conduct UAS operations notify the adjacent facilities of the operation 24-48 hours in advance along with providing a "24-Hour Advanced Notice of UAS Operation" form to Sector New Orleans Facility Compliance Branch through electronic mail at Transfemoticenola@uscg.mil, or through facsimile at (504) 365-2287 and fistnola@uscg.mil

If a facility representative observes an unidentified UAS operating in the airspace in the vicinity of and/or inside airspace directly above the property boundaries of a MTSA regulated waterfront facility (to include "Secure Areas" and/or "Restricted Areas"); the standard NRC reporting process for MTSA regulated waterfront facilities in the New Orleans COTP Zone is encouraged. Furthermore, facility personnel and mariners are also encouraged to report suspicious UAS activity to American Waterways Watch (877-249-2824) and DHS "See Something Say Something."

Additionally, if the UAS lands/impacts against the ground and/or physical infrastructure within a "Secure Area" and/or "Restricted Area" of a MTSA regulated waterfront facility, then facilities shall file a "Security Breach" with the NRC as per 33CFR101.305. Finally, facility representatives shall follow their approved Facility Security Plan and make all the required notifications to facilitate the investigation of the incident.

A "24-Hour Advanced Notice of UAS Operation" form is supplied with this MSIB, identified as MSIB XVII Issue 002a. Form can also be located at the Sector New Orleans, Homeport.

For further information, contact the Sector New Orleans Facility Compliance Branch at (504) 365-2370 or (504) 365-4477.

Mandatory Requirement MSIB Marine Safety Office

W.R. Arguin
CAPTAIN W.R. ARGUIN
Captain of the Port New Orleans

For a current list of MSIB's within the COTP New Orleans Zone click: <https://homeport.uscg.mil/nola> under "Safety and Security"



24-Hour Advanced Notice of Unmanned Aerial System (UAS) Operation

The following information can be sent to the United States Coast Guard Sector New Orleans Facility Compliance Branch by e-mail at Transfemoticenola@uscg.mil, or faxed to (504) 365-2287 and fistnola@uscg.mil. If you have any questions please call Sector New Orleans Facility Compliance Branch at (504) 365-2370.

| | |
|---|---|
| Facility Name | [REDACTED] |
| Location (Mile Marker and River Bank or Lat/Long) | LMR MM 169 |
| Start Date and Time of Operation | 05.13.19 at 1200 |
| End Date and Time of Operation | 05.13.19 at 1700 |
| UAS Manufacture and Model Number | DJI - Phantom 4 |
| UAS Serial Number (if available) | 11UCF6S0A40029 |
| Facility Representative | [REDACTED] |
| 24-Hour Contact Information | [REDACTED] |
| Description | Operating UAS for data collection purposes at facility. |

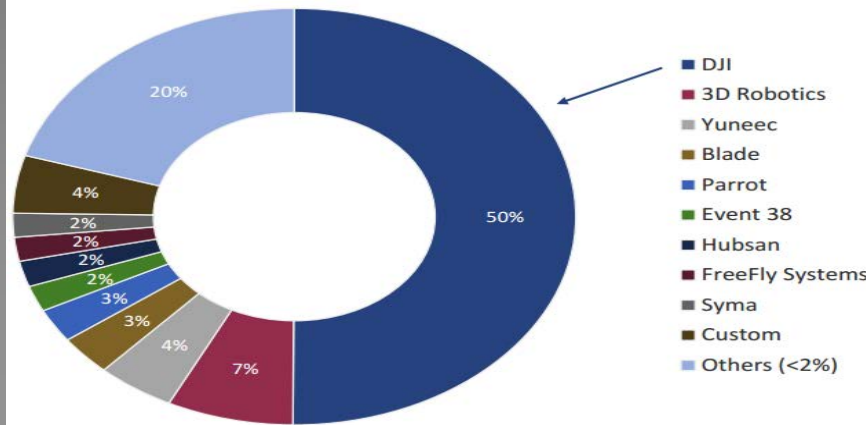
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U.S. Army Directive Discontinue Use of DJI

DJI Drone Products Represent 70% of US Market

| Rank by USD Share | Drone Manufacturer |
|-------------------|-------------------------------|
| 1 | |
| 2 | Parrot |
| 3 | PROTOCOL |
| 4 | |
| 5 | No Longer Building Drones |



FOR OFFICIAL USE ONLY
DEPARTMENT OF THE ARMY
 OFFICE OF THE DEPUTY CHIEF OF STAFF, G-3/5/7
 400 ARMY PENTAGON
 WASHINGTON, DC 20310-0400

2 August 2017

FOR RECORD

Discontinue Use of Dajiang Innovation (DJI) Corporation Unmanned Aircraft

1. References:

- a. Army Research Laboratory (ARL) report, "DJI UAS Technology Threat and User Vulnerabilities," dated 25 May 2017 (Classified).
- b. Navy memorandum, "Operational Risks with Regards to DJI Family of Products," dated 24 May 2017.

2. Background: DJI Unmanned Aircraft Systems (UAS) products are the most widely used non-program of record commercial off-the-shelf UAS employed by the Army. The Army Aviation Engineering Directorate has issued over 300 separate Airworthiness Releases for DJI products in support of multiple organizations with a variety of mission sets. Due to increased awareness of cyber vulnerabilities associated with DJI products, it is directed that the U.S. Army halt use of all DJI products. This guidance applies to all DJI UAS and any system that employs DJI electrical components or software including, but not limited to, flight computers, cameras, radios, batteries, speed controllers, GPS units, handheld control stations, or devices with DJI software applications installed.

3. Direction: Cease all use, uninstall all DJI applications, remove all batteries/storage media from devices, and secure equipment for follow on direction.

4. Point of Contact: Headquarters, Department of the Army G-3/5/7 Aviation Directorate, 703-693-3552.

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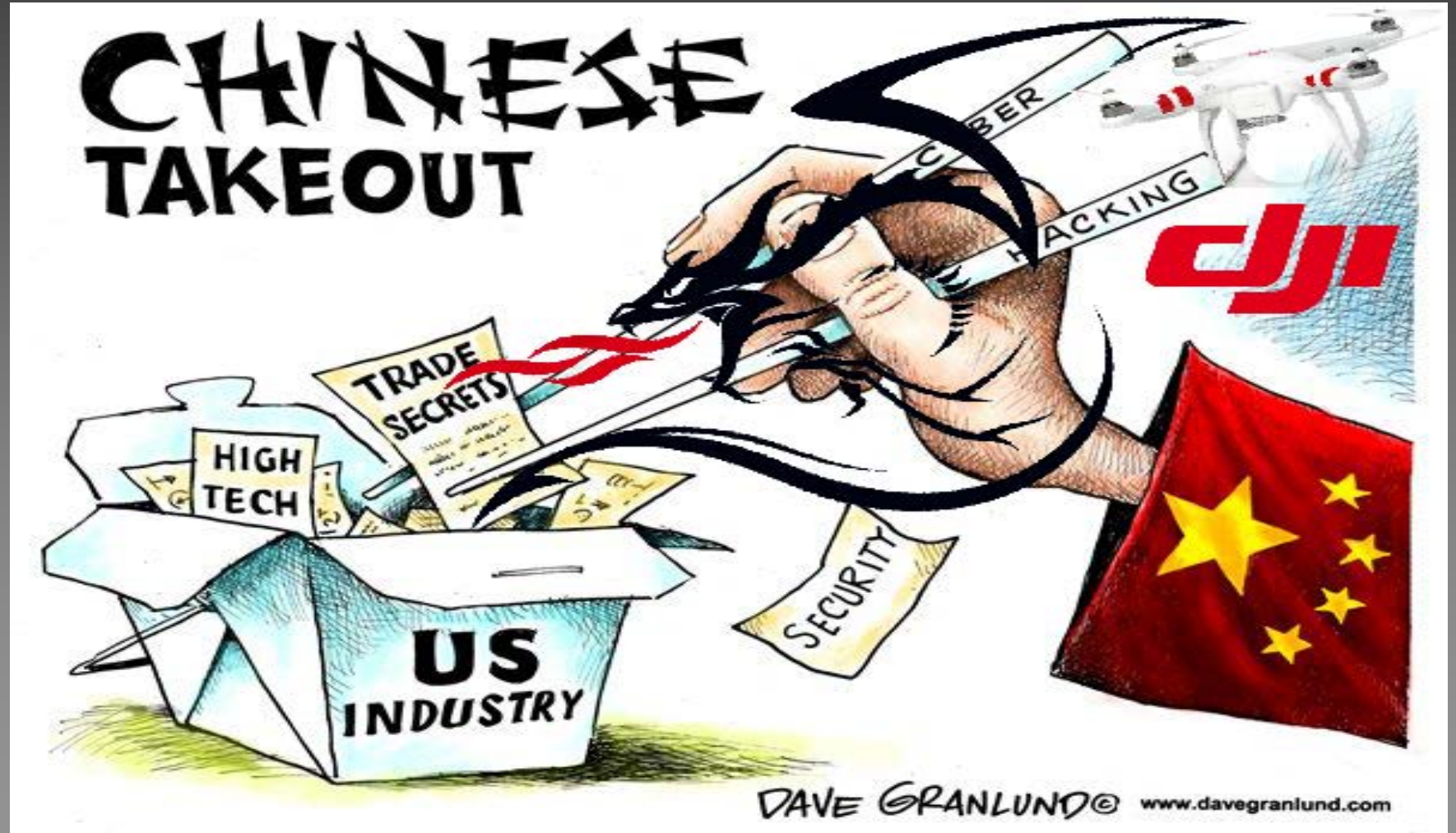


DJI Trojan Horse Software

U. S. Army Stop Order in Using DJI Drones
Destroyed All DJI Drones Last Fall

Cyber Vulnerabilities

- DJI Tranship Your Data
- DJI Telemetry Data sent back after each flight to Servers in China
- Your Data is Collected via the DJI GoApp
- Trojan Horse Gateway on U. S. Critical Infrastructure sent to China



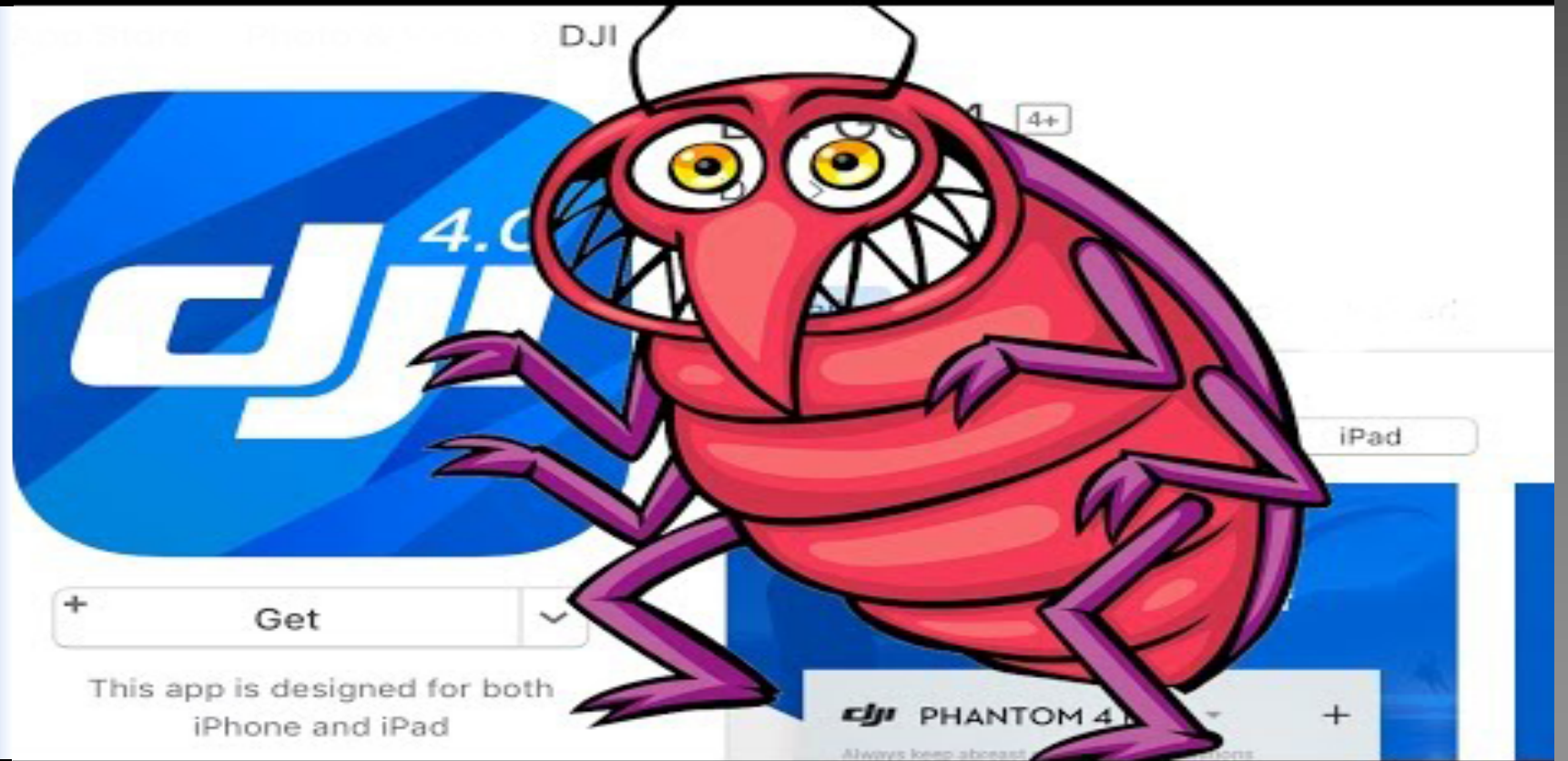
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DJI's Bug Bounty Reward

Identifying Security Issues With DJI Software

- Hacking & Disabling
- Undetected "hot patching" of code
- DJI Will Pay Up To \$30K for helping ID a Significant Vulnerability
- Even with this Program How Do We Know if there is Still a Trojan Horse



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DHS Alert Chinese Manufactured UAS

Potential Risk To An Organization's Information and Sensitive Data



Operators

Inexperienced operators can place an organization's UAS device and its data at risk if they do not follow established procedures for securing the UAS before, during, and after flight. Both transmitted and stored data are vulnerable when the device, its components, or its transmission feed are not properly secured by the operator.

Manufacturers & Vendors

Organization's information is at risk if employing technology that has been corrupted by malware, or contain automatic data transmission back to a third party. Manufacturers and vendors can build in malware or collect data from your UAS device without your knowledge.

Data Theft

Organizations are susceptible to theft of information if the UAS device and your organization's network are not properly secured, and if the communication feed that the UAS is operating on is unencrypted.

Network Intrusion

UAS can expose organizations to network breaches, which could lead to unauthorized access to data sets and other information.



DHS Alert Chinese Manufactured UAS

Reducing Drone Risk; Mitigation Strategy



Purchase UAS devices and components from reputable vendors

Do your research and ensure that the vendor from whom you plan to purchase your device and its components is trustworthy. Be cautious when purchasing UAS technology from Chinese manufacturers as they can contain components that can compromise your data and share your information on a server accessed beyond the company itself.

Understand how and where your UAS data is being stored

Be aware of whether your UAS data is being stored by the vendor or other third parties. If it is being stored, find out how, where, and for how long.

Determine how your UAS will interact with infrastructure and networks

To avoid compromising proprietary information, be sure to understand how to properly operate and limit your device's access to networks in order to avoid unnecessary exposure of data to external threats. There are proactive steps that can be taken to deactivate vulnerable features of UAS.

Perform a risk assessment

Risk assessments should be performed to identify physical and cyber threats to your organization's information. Assessments can inform how to appropriately incorporate UAS into security and safety operations while reducing the risks of data compromise to market competitors or malicious actors. Protective and response strategies should be incorporated into emergency action plans.

Implement a layered security approach

Develop policies, strategies, and plans that collectively address the UAS device, its components, the operator, and your organization's physical and cyber infrastructure.

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DHS Alert Chinese Manufactured UAS

Potential Risk To An Organization's Information
and Sensitive Data



Potential Mitigating Measures for Chinese Manufactured UAS



Deactivate internet connection from device used to operate the UAS.



Take precautionary steps prior to installing updated software or firmware.



Remove secure digital card from the main flight controller/aircraft.

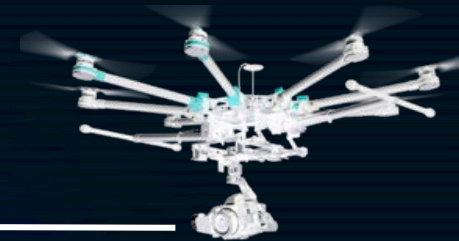


If SD card is required to fly the aircraft, remove all data from the card after every flight.

www.dhs.gov/cisa/uas-critical-infrastructure

Screen

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Notification of Drone Flights on the Outer Continental Shelf (OCS)



Critical
Infrastructure/USCG
Regulated Facilities



Ships Arriving At Loop From Terror Hotspots

Threats can arrive by Ships Loading or Off-loading at LOOP

18 Miles Off the Coast

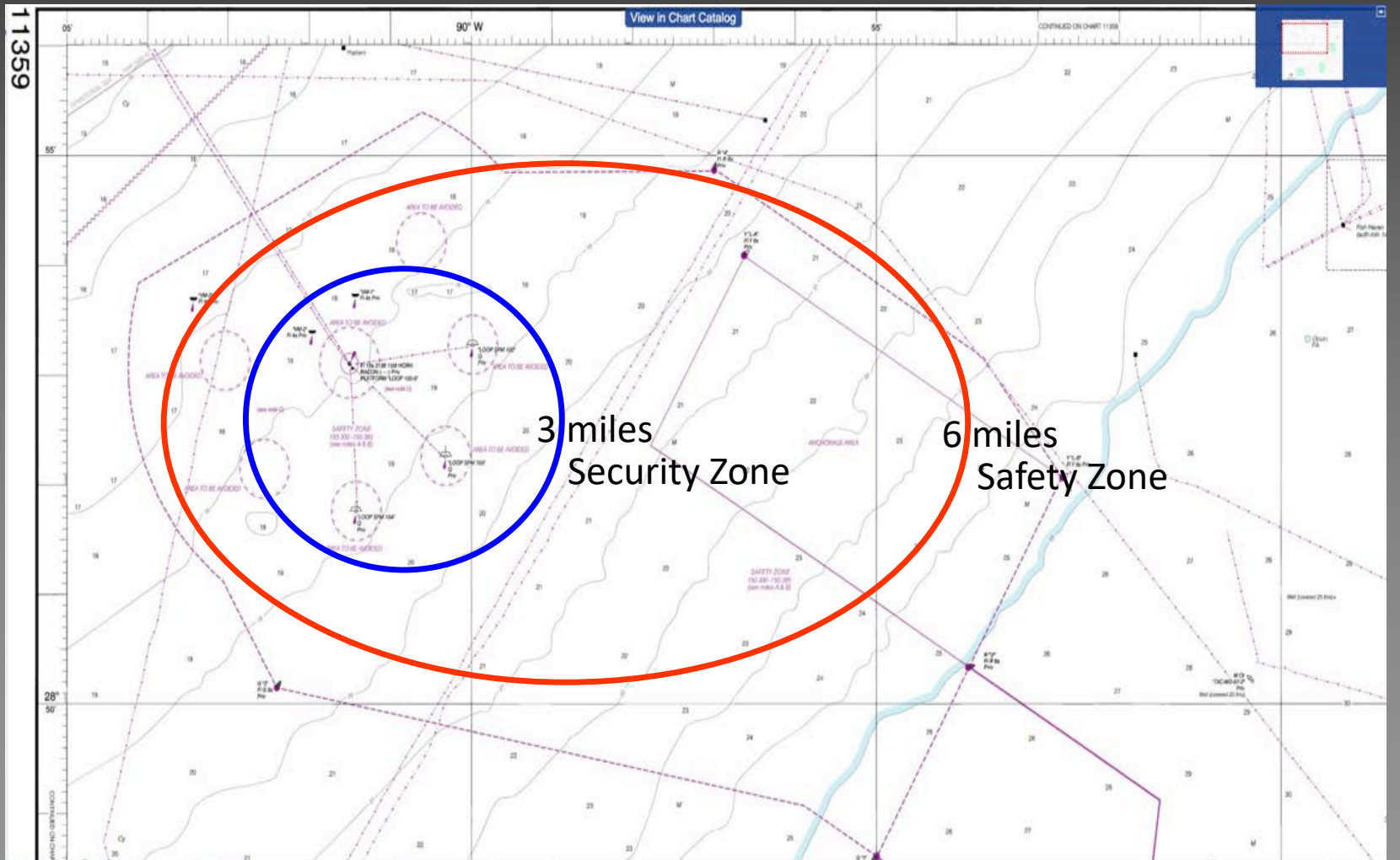
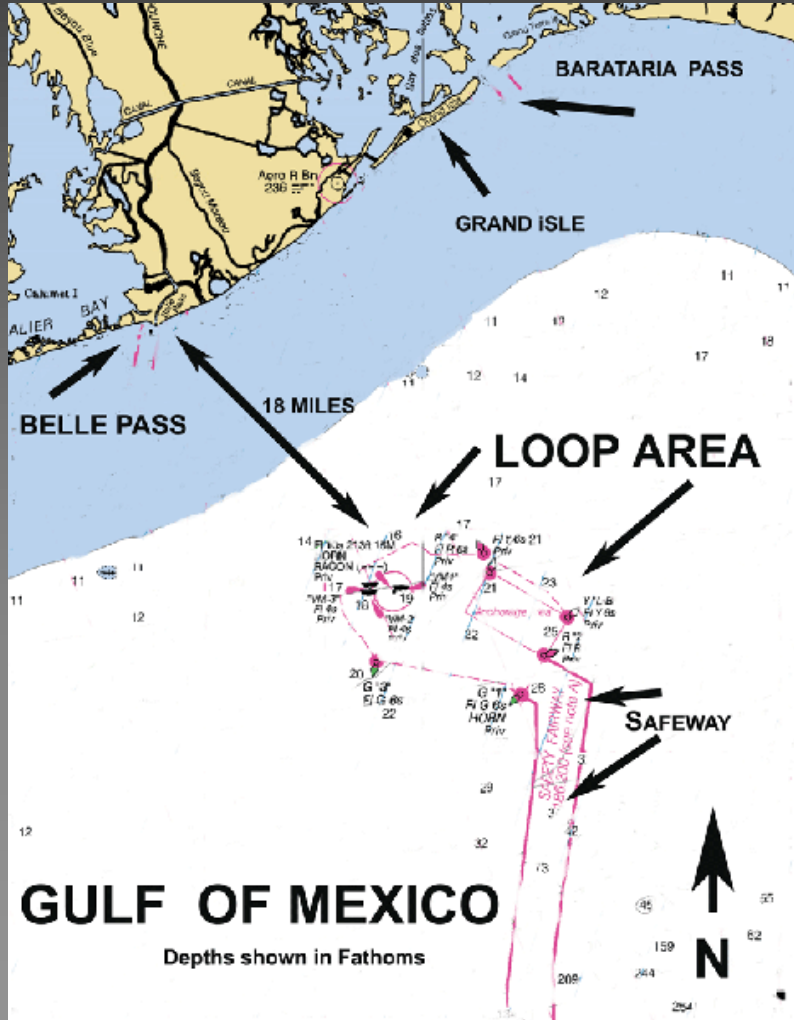


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Drone Endurance Rapidly Improving

Building a Geo Fence around LOOP Marine Terminal



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HGJ/VEG Easy Access to Vessels

Night Time Attack at Production Platform;
Hard to Defend

VEG; Violent Extremist Groups:

- Sovereign Citizen Extremists
- Anarchist Extremists
- Militia Extremists
- White Supremacy Extremists

HGE; Home Grown Extremist



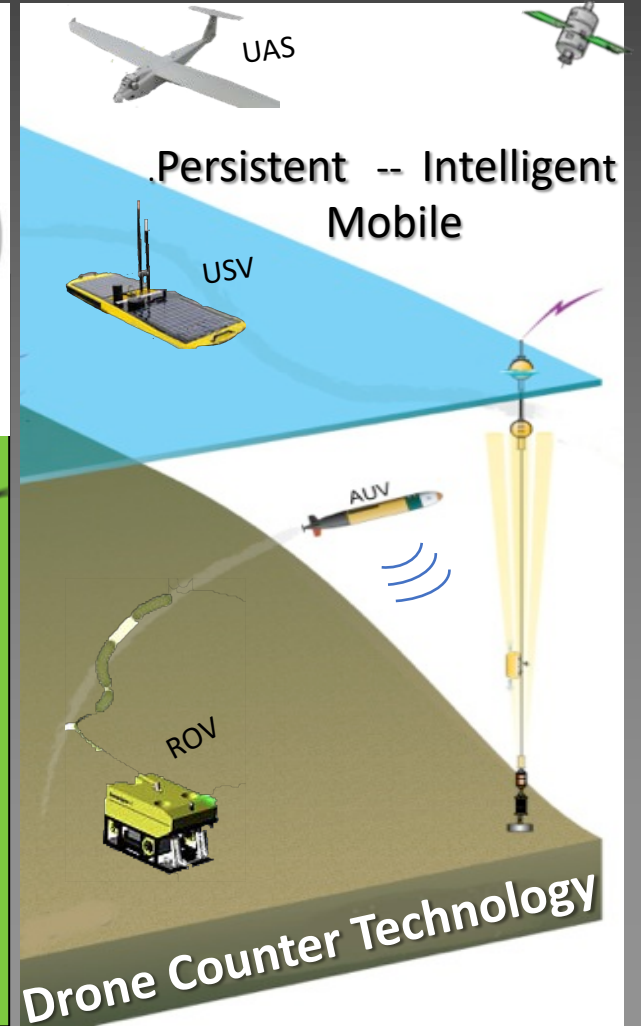
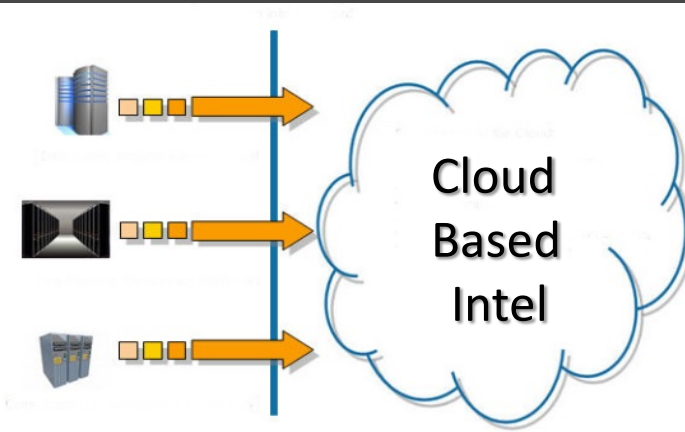
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Geo-Fencing Production Platforms

All Possible for Drone Threats

OCS Drone Threats



USV



AUV



Divers



Fixed Wing Drone



Multi-Rotor Drone

Oil/Gas Platforms

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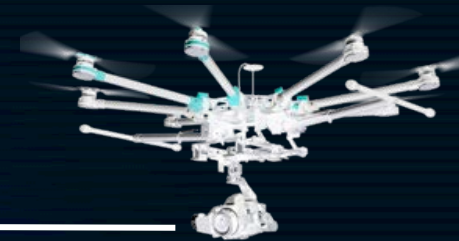
USCG D8 OCS Developing Working Group

Developing UAS Pre-Flight Reporting Similar to the LMR Current Requirements

- Counter - UAS
- Counter - USV
- Counter - AUV
- Counter Diver
- Common Operating Picture on the Platform and Ashore HQ
- Encrypted Control and Data Lines of Communication



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Counter-UAS

Legal Issues





Counter-Drone Technology Issues

FBI's Operational Technology Law Unit



A Federal Aviation Administration (FAA) reauthorization bill contains a provision that would allow the Department of Homeland/DOJ-FBI Security to attack drones that threaten national assets, Unveiled the same day, the provision is part of *H.R. 302*

Legal Challenges to Taking C-UAS Actions

Wiretap Act (18 USC §2511)

Pen Register Act (18 USC §2511)

Computer Fraud & Abuse Act (18 USC §1030)

Aircraft Sabotage Act (18 USC §32)

Satellite Signals Interference (18 USC §1367)

Other Challenges

Communications Interference (47 USC §333)

National Strategy on Aviation Security

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FBI Director Christopher Wray

Risk of Drones Steadily Increasing

- FBI is convinced that **terror groups will use Drones** to carry out attacks on American
- FBI assesses that, given their retail availability, lack of verified identification requirement to procure, general ease of use, and **prior use overseas**
- Terrorist easily export their battlefield experiences to use **weaponized Drones** outside the conflict zone
- "We have seen repeated and dedicated efforts to use Drones as weapons, not only by terrorist organizations, such as ISIS and al Qaeda, but also by **transnational criminal organizations such as MS-13 and Mexican drug cartels.**"

Senate Homeland Security and
Governmental Affairs Committee
October 10th, 2018



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FAA Reauthorization Act 2018 Signed By President

FBI/HLS Authority Down Drones Deemed “Credible Threat” to Federal Facilities

H.R. 4 THE FAA REAUTHORIZATION ACT OF 2018

SEC. 364. U.S. COUNTER-UAS (C-UAS) SYSTEM REVIEW OF INTERAGENCY COORDINATION PROCESSES

FAA has **60 days to start reviewing and 180 days** to deliver a report on how the Administration coordinates C-UAS activity and what standards are used to protect the NAS, people and property from rogue UAS without interfering with the avionics of legally operating aircraft or air traffic control systems. The report must state how the administration assesses C-UAS system standards, how the interagency process works for C-UAS and whether the administration needs additional C-UAS authorities.

SEC. 44810. AIRPORT SAFETY AND AIRSPACE HAZARD MITIGATION AND ENFORCEMENT

The FAA must develop a plan to **certify, permit and authorize C-UAS systems**. The FAA must set up an aviation rulemaking committee (ARC) to make recommendations and test C-UAS at five airports, including one top 10 passenger boarding airport. Airport sponsors can buy certified counter UAS systems using the Airports Improvement Program funding (AIP). The plan cannot delegate C-UAS authority to other federal, state, local, territorial, or tribal agencies, or an airport sponsor.

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The **Aircraft Sabotage Act, the Computer Fraud and Abuse Act of 1986, the Wiretap Act and the Pen/Trap Statute, shall not apply to FAA counter UAS activities.**

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DHS Counter Unmanned Aircraft System (CUAS) RFI

DHS's COUNTER UNMANNED AIRCRAFT SYSTEMS TEST PROGRAM at SNL

Title 14 of the Code of Federal Regulations [§ 99.7](#) – “Special Security Instructions”

Restricted Airspace



USCG



DOI



DOJ



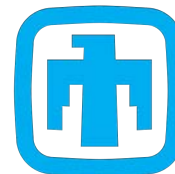
DOE



DOD



DHS S&T



Sandia National Laboratories

SNL Test & Evaluation
Video Temporal Frequency Analysis (TFA)
Acoustic
Metamaterials Electronically Scanning Array (MESA™) radar

Preventing Emerging Threats Act of 2018

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Counter-Drone TTPs

Drone Detection & Tracking Technology

Employing Drones

- Dynamic
- Static (Tethered All Weather)

Ground Based

Cameras

- Optic
- Infrared

Acoustic

RADAR



Addressing the Issues

Issues

Restrictive Federal Laws

Limited State Laws

Aggressive NGO & Individuals

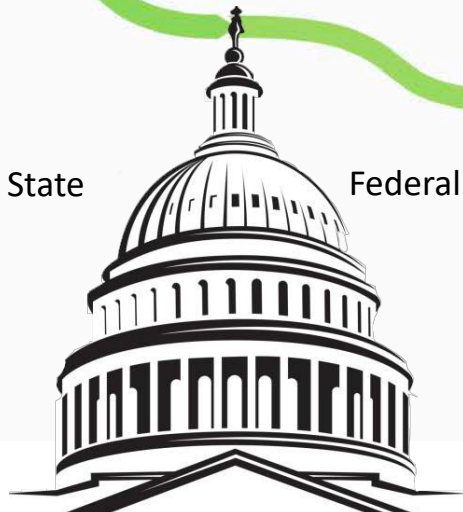
Growing Threats to Critical Infrastructure

State

Federal

Industry Partnerships

Invoke a Modified State Law
Increase FAA's Law Enforcement Authority

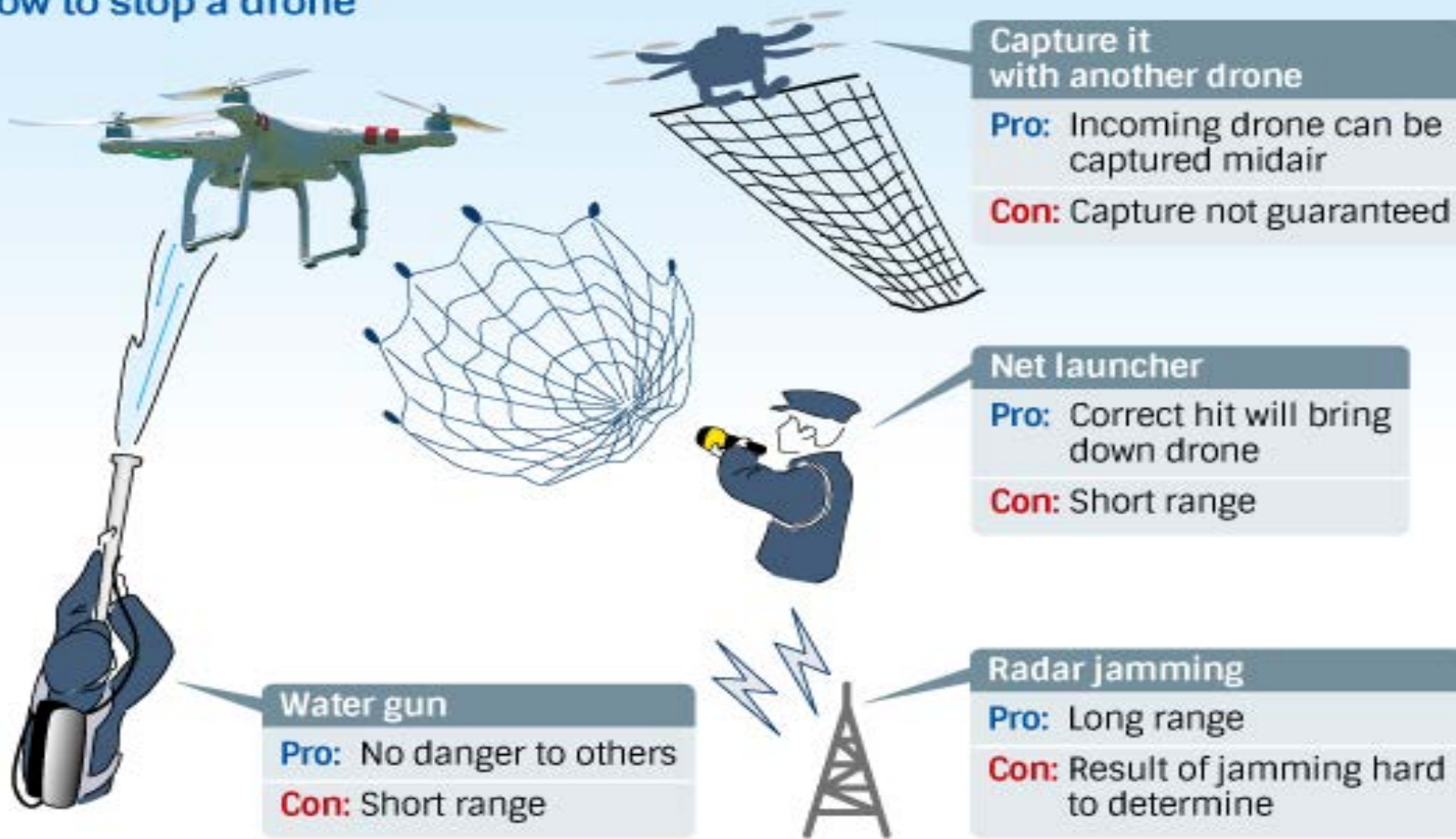




Current Approaches

Tactics Techniques Procedures (TTP)

How to stop a drone



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Preventing Emerging Threats Act of 2018 (Div. H, Sec. 1601)

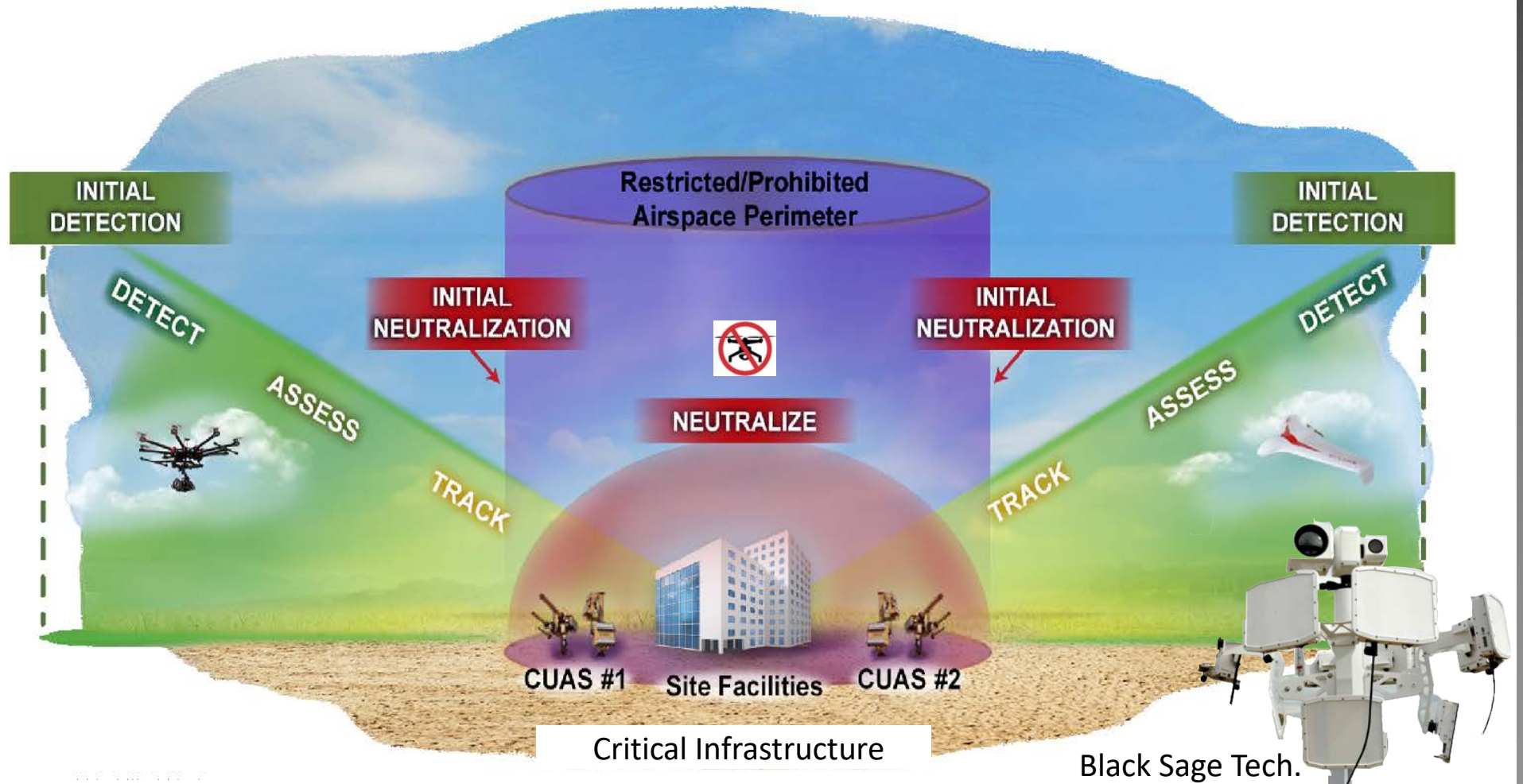
DHS's COUNTER UNMANNED AIRCRAFT SYSTEMS TEST PROGRAM

DHS also must conduct an assessment on the threat from UAS to critical infrastructure and large domestic airports



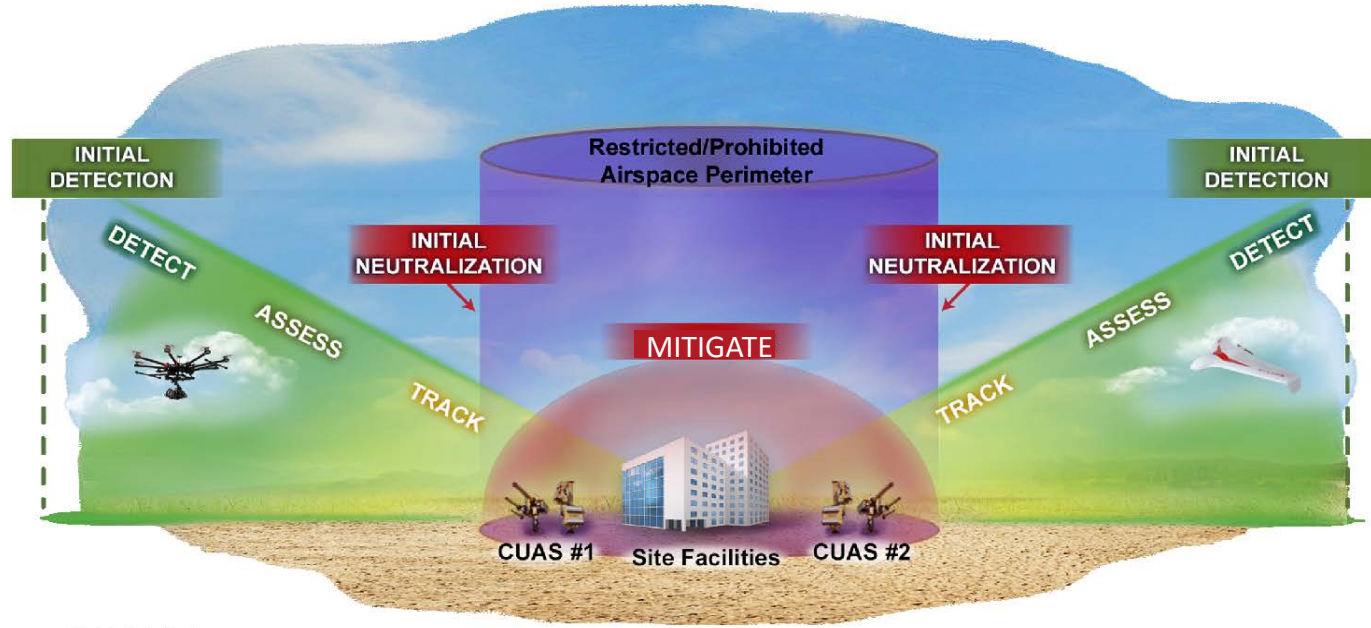
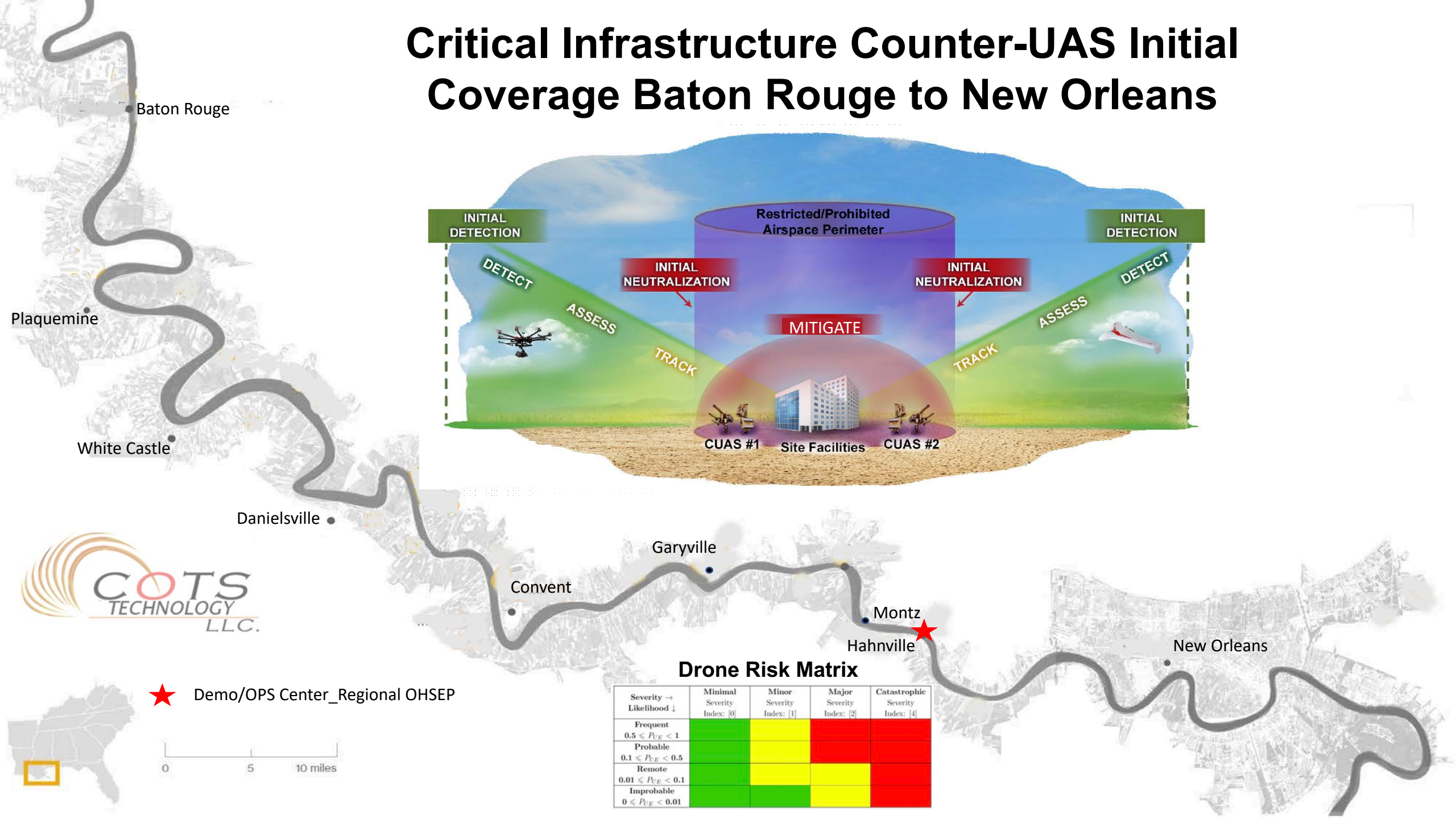
High Cost Systems

Lit eye - AUADS system



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Critical Infrastructure Counter-UAS Initial Coverage Baton Rouge to New Orleans



★ Demo/OPS Center_Regional OHSEP



Drone Risk Matrix

| Severity → Likelihood ↓ | Minimal Severity Index: [0] | Minor Severity Index: [1] | Major Severity Index: [2] | Catastrophic Severity Index: [4] |
|------------------------------------|-----------------------------------|---------------------------------|---------------------------------|--|
| Frequent $0.5 \leq P_{VE} < 1$ | Green | Yellow | Red | Red |
| Probable $0.1 < P_{VE} < 0.5$ | Green | Yellow | Red | Red |
| Remote $0.01 \leq P_{VE} < 0.1$ | Green | Yellow | Yellow | Red |
| Improbable $0 < P_{VE} < 0.01$ | Green | Green | Yellow | Red |



If U Fly U Must Comply

FAA & Industry Educating the Public
B4UFLY Resolution Before Our LA Legislature

I FLY SAFE



All drones are aircraft—even the ones at the toy store.
So when I fly a drone I am a pilot.
Before I fly I always go through my pre-flight check list.
I regularly check the safety guidelines at faa.gov/uas

**FLY SMART, FLY SAFE,
AND HAVE FUN!**

knowbeforeyoufly.org
faa.gov/uas

PRE-FLIGHT CHECKLIST

- ▶ I fly below 400 feet
- ▶ I always fly within visual line of sight
- ▶ I'm aware of FAA airspace requirements: faa.gov/go/uastfr
- ▶ I never fly over groups of people
- ▶ I never fly over stadiums and sports events
- ▶ I never fly within 5 miles of an airport without first contacting air traffic control and airport authorities
- ▶ I never fly near emergency response efforts such as fires
- ▶ I never fly near other aircraft
- ▶ I never fly under the influence



Federal Aviation
Administration

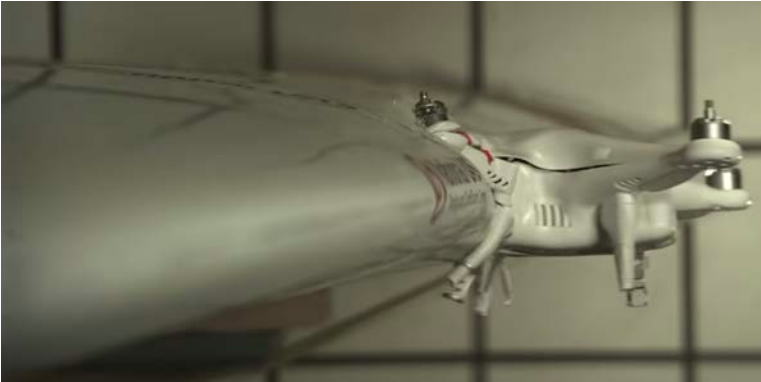


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FAA's Greatest Fear

Integrating Drones into the National Air Space



Experiment; Drone Striking a Wing



Sky invaders

25 ft. from drone

15 ft. off the ground

100 MPH

■ About 2:25 p.m. Friday: JetBlue Flight 1834 from Haiti to JFK was approaching Runway 31-R at an altitude of about 800 to 900 feet when the crew of the Airbus 320 spotted a drone passing directly beneath it.

■ About 5 p.m. Friday: Delta Flight 407 from Orlando, Fla., was at 1,400 feet when the crew spotted a drone about 100 feet beneath it and roughly a quarter mile away. The MD-88 was heading to JFK's Runway 13-L at the time.

■ 6 p.m. Sunday: A drone flew in front of Shuttle Airways Flight 5911 from Richmond, Va., as it was traveling at about 100mph. The "quadcopter" came within roughly 25 feet of the Embreair Model 145, which was a mere 15 feet from touching down on Runway 13-L at JFK Airport.

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First Proven Incident in USA

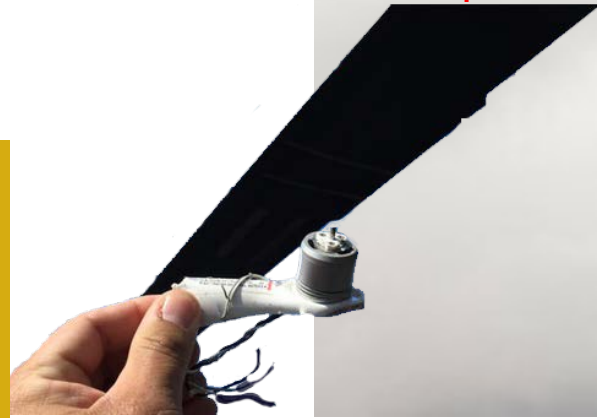
82nd Airborne U.S. Army Black Hawk Helicopter

500 feet above the
Midland Beach
section of Staten
Island 1930 EST Last
Week



DJI Phantom 3

A Piece of a Drone
was Found in the Oil
Cooler and Damage
to the Fuselage and
Two Blades



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Last Word On Drone Safety

Drones Are Not Toys When The Blades are Spinning



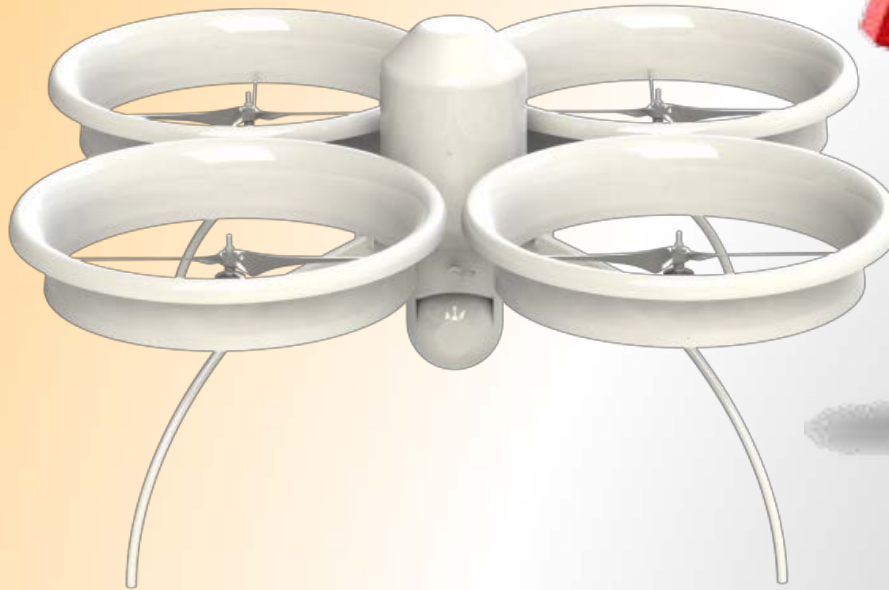
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