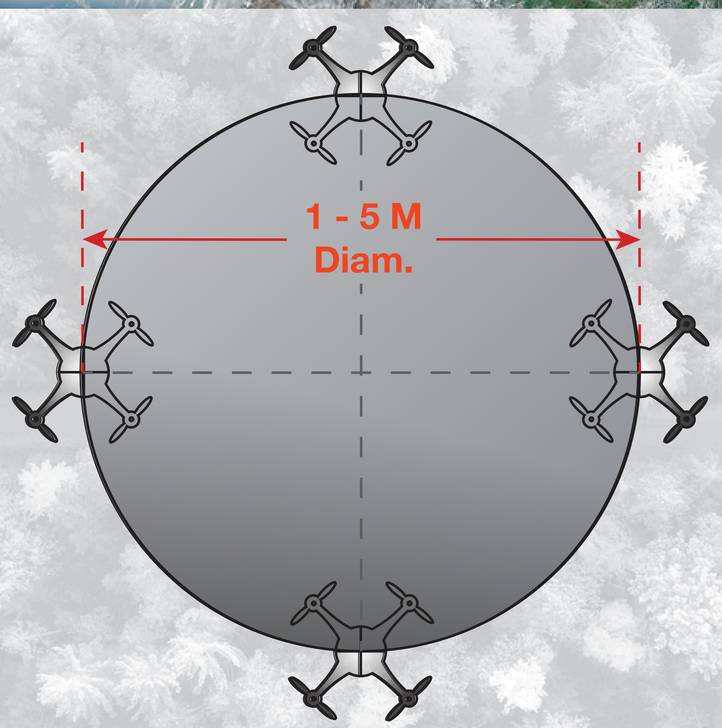
Drones and Drone Platforms

U.S. Navy Prototype Drone: RPB-Robotic Piloted Drone
Image Source: US Navy

Modern Navy X47B RPB Drone,
aboard USS George H. W. Bush
Image Source: US Navy

MQ-25 Tanker Refueler Drone
Image Source: © Dezeen Limited, Boeing©



MQ9 Thrust Equation

$$T = \frac{\pi}{4} D^2 \varrho v \Delta v$$

$T = thrust\ [N]$

$D = propeller\ diameter\ [in]$

$v = velocity\ of\ air\ at\ propeller\ \left[\frac{m}{s}\right]$

$\Delta v = velocity\ of\ air\ accelerated\ by\ propeller\ \left[\frac{m}{s}\right]$

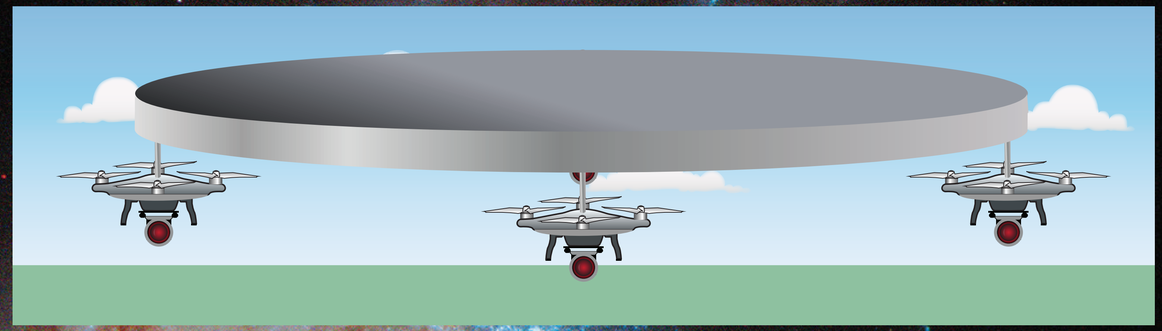
$\varrho = density\ of\ air\ \left[1.225\ \frac{kg}{m^3}\right]$

Speaker: John M. Dilorio (Main Room)
United Way of Greater Houston, 50 Waugh Drive, Houston, Texas 77007
Date: 2018
Time: 5:15 pm - 6:30 pm

Tutorial: “Drones and Drone Platforms”

The learning objectives for this tutorial are:

- **The quality requirements for a Drone Platform.**
- **The commercial contractor customer requirements.**



Design Criteria

- **Jet engine, rotor engine, or particle thruster (thrust) of 30,000 lbs.**
- **Thrust/weight ratio of 1.2 (a computerized safety margin of 1.1)**
- **Advanced dirigible material and frame**
- **Limited Helium pockets**
- **Aerial flight stabilizers**

Thrust/weight (raw) calculation: ~ (4 thrusters) times 30,000 lbs./x = 1.2 or weight = 100,000 lbs. or 50 tons.
Thrust/weight (Helium) calculation: ~ 2.5 factor or 100,000 lbs. times 2.5 = 250,000 lb. or 125 tons[1].
Thrust/weight (Jet) calculation: ~ (- thruster engine) times 2 (Piloted VTOL jets) = 60,000 lb. or 30 tons.
Thrust/weight (Safety) calculation: 50 tons plus 125 tons minus 30 tons/50 tons = 2.9 (RPV range)

[1] This takes in account the weight of the drone platform.

1 M Diam. Security Wi-Fi Drone

John M. Dilorio has made presentations at Space City Comic Convention, ComicPalooza, in association with Planet Forbidden Pictures and NASA Science Faction. Models — Prizes — Demonstrations