Why Aircraft Carriers have an angled Runway.

POPULAR MECHANICS

In 1919, Admiral William Benson tried to eliminate the Navy's Aviation Division, claiming he could not "conceive of any use the fleet will ever have for aviation." By the end of the war, engagements like the Battle of the East China Sea were showing American naval air superiority.

Such success bled into the 50s, with jets becoming increasingly common on aircraft carriers. But as carriers became more widely and commonly used, problems arose. What was the best way to get jets on and off the carriers quickly and to efficiently arrange things to maximize both carrying capacity and runway space.

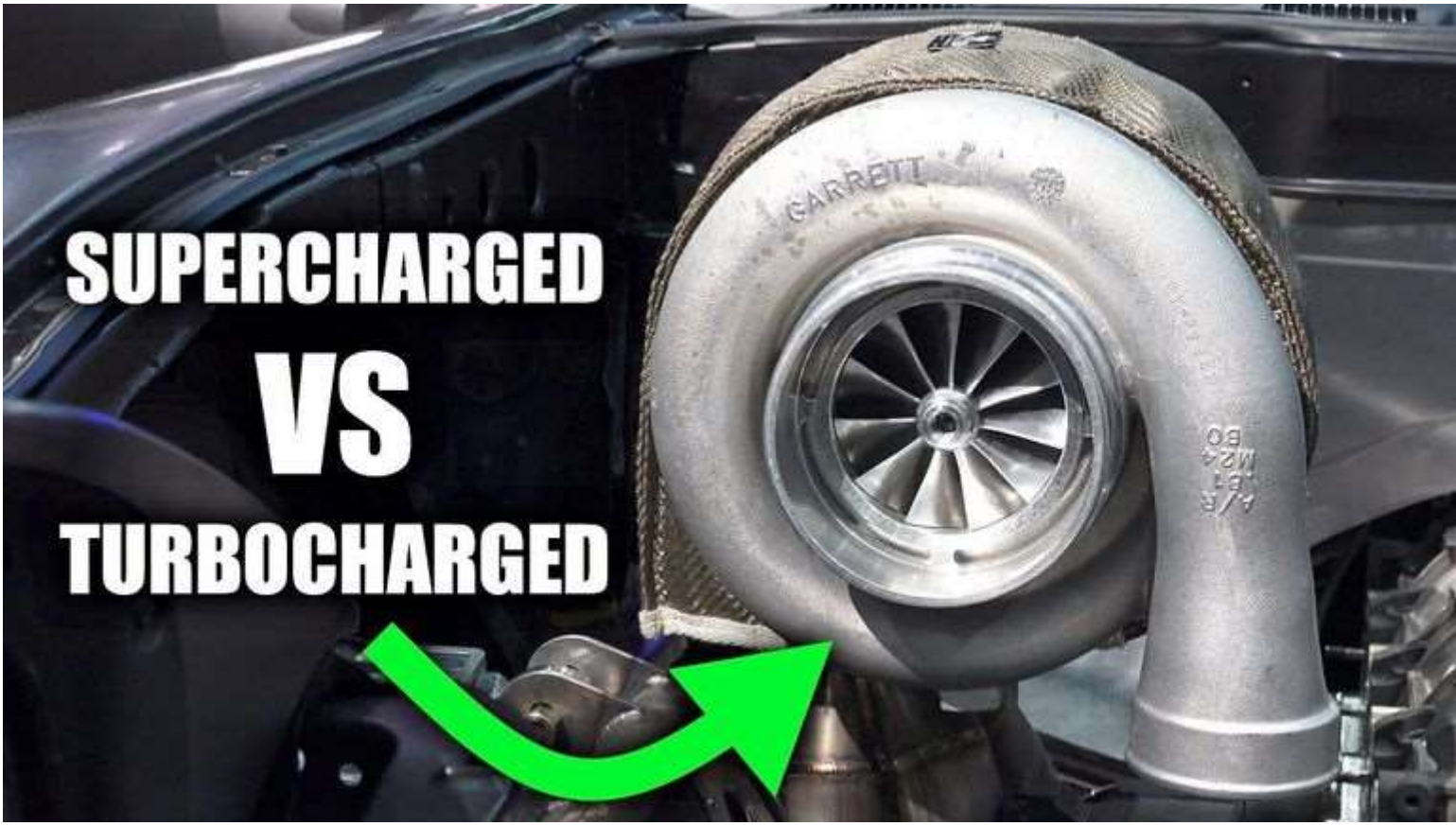
This U.S. Navy training film from 1955 shows the solution that the Navy came up with, which is still in use today: angular runways. See HERE.

The angled design, invented by Rear Admiral Dennis Cambell of the British Royal Navy, and presented to the US in 1951, offered a few distinct advantages over other options. In the case of an aborted landing, an angled runway gave returning planes plenty of room and open air to speed up and take off again. Better yet, this angled design kept carriers from having to sacrifice any on-deck parking space for planes not currently in flight.

It's a simple bit of geometry, but with big implications, ones that carry forward to the modern day.

Turbocharger Vs. Supercharger: What's the Difference?

Each has its advantages and disadvantages. Here's what you need to know.



It's the eternal question in the tuner world: Turbo or supercharger? Each has its benefits and drawbacks—and this new video helps take away the mystery.

Both forms of forced induction have their advantages and disadvantages. It's up to you to decide which suits your car best. Turbochargers are great because they turn exhaust gas that would otherwise be wasted into power. They allow small engines to make big power and provide a swell of torque a naturally aspirated engine wouldn't otherwise have.

Superchargers, on the other hand, force air into the engine by drawing power from the engine, not the exhaust. Therefore, the effectiveness of the supercharger increases as the RPM increases and unlike turbochargers, superchargers generally don't change the trajectory of the torque curve, so it's like driving a naturally aspirated car, just with more horsepower. Throttle response is similar to that of a naturally aspirated car, so there's no waiting for that power to kick in.

There are downsides to each application, of course. Turbochargers usually have lag, and generate a lot of heat, while superchargers suck power from the engine to run and therefore aren't very efficient.

But that's just a simple explanation. Have a look at the video HERE.

Wife texts her handy husband on a cold winter morning: "WINDOWS FROZEN ~ WON'T OPEN." Husband texts back: "GENTLY POUR SOME LUKEWARM WATER OVER THE EDGES AND THEN TAP EDGES SHARPLY WITH HAMMER." Wife texts back 5 minutes later: "LAPTOP REALLY BUGGERED NOW."

Just over 30 years since an F-111 crashed.

On the 2nd April, 1987, Flight Lieutenant Mark 'Speed' Fallon (pilot), aged 24, and Flying Officer William Pike (navigator), aged 22, lost their lives when their F-111 crashed in a paddock near Tenterfield and disintegrated across Mt Lindesay Rd. The aircraft, which was a model C, was delivered to the Air Force in the 1st June 1973. On that day it left East Sale for a navex and simulated attack and intended to land at Amberley at the conclusion of the flight.

At the subsequent enquiry, it was suggested the most probable cause of the accident was that the crew lost situational awareness with respect to altitude during a critical flight manoeuvre. Possible contributory causes of their loss of situational awareness included:

1. misreading the altimeter;
2. distraction of the crew from the primary task;
3. lack of any external visual cues;
4. G-loss of consciousness (G-LOC);

5. pilot psychological profile (considerable personal life stressors – potential for decreases in performance/vigilance due to subjective fatigue); and/or
6. visual impairment or partial incapacitation of the pilot (due pre-existing chronic heart condition revealed at autopsy).

The aircraft crashed into a paddock next to John and Barbara Brown's house. Barbara, who was an eyewitness gave an eyewitness account of the tragedy, describing the crash as 'terrifying' as her house rocked and five young children inside cried in fear.

"The house shook like we'd been hit by a huge earthquake," she said.

The aircraft first hit the ground west of Mt Lindesay Rd into a paddock near the house and disintegrated across the road, leaving a trail of flames.

Residents up to five kilometres from the crash site felt the impact.

A memorial has been erected northeast of Tenterfield, NSW, 300m north of Mount Lindesay Road/Old Ballandean Rd Intersection on western side of Hwy

On Sunday 2nd April 2017, a ceremony was held in remembrance of two deceased aviators with Wing Commander Richard Peapell hosted the ceremony and wreaths were laid by family members and others.

After a recital of The Ode and a playing of the Last Post, those present moved to the Tenterfield Golf Club for lunch.

Neighbour John Brown cleans the crash site memorial in preparation for the ceremony which was held last year.

Russia, China will have Anti-Satellite Weapons "within a few years"

POPULAR MECHANICS

The real question is, would they use them?

The U.S. intelligence community's new worldwide assessment of threats to the United States and its allies issued a stark warning about space warfare: Russia and China will be able to shoot down the US's satellites within two to three years.

The capability would seriously jeopardize the U.S. fleet, including Global Positioning System satellites, military and civilian communications satellites, and spy satellites. But would either country use them? and if they did, would they risk even greater damage to their own networks?

According to the document, "Worldwide Threat Assessment of the U.S. Intelligence Community," U.S. intelligence agencies think Russian and Chinese anti-satellite (ASAT) weapons "probably will reach initial operational capability in the next few years." The document further claims that China's People's Liberation Army has created anti-satellite military units and begun "initial operational training" to use these anti-sat weapons launched from the ground.

The document claims Russia has made similar progress.

The Advanced Extremely High Frequency military communications satellite.

The Chinese tech in question is the SC-19 anti-satellite weapon. The SC-19 is launched from a mobile missile launcher and lofted into space by a modified DF-21 medium range ballistic missile. It's a kinetic weapon, meaning it smashes into the target to destroy it on impact.

The weapon weighs 1,200 lbs. and uses an imaging infrared seeker to home in on its target. The SC-19 has been tested at least seven times. In 2007, it intercepted the decaying Fengyun 1C satellite at an altitude of 537 miles as target practice. The collision created a cloud of space debris that earned China worldwide condemnation.

Less is publicly known about Russian anti-satellite weapons. The PL-19 “Nudol” is one such system, last tested in December 2016. Moscow claims Nudol is an anti-missile missile, built for intercepting warheads streaking towards targets in space. All these anti-satellite weapons are meant to offset America’s advantage in orbit. U.S. military forces, often operating thousands of miles from home, use satellites for navigation (GPS), communications, and collecting information on potential adversaries. U.S. forces are reliant on satellites for day-to-day operation but train to operate without them in wartime. For example, the U.S. Air Force’s recent Red Flag exercise forced aircrews to operate without the benefit of GPS, and the U.S. Navy is studying how to keep communications up and running if satellites are shot down using seagoing buoys.

The US Advanced Extremely High Frequency military communications satellite.

Just how much of a danger are these weapons? There’s no doubt America would suffer a serious blow if adversaries used anti-satellite weapons in a surprise, sneak attack, but here's something else to consider: Russia and China are just as reliant on satellites, if not more so. Their satellite networks are just as vulnerable, and possibly more difficult to replace than that of the U.S., which is a much more robust space power that is developing strategies to quickly fill holes in satellite networks with replacement satellites.

Either country using anti-satellite weapons in a conflict might end up making things even more difficult for itself in the long run, when retaliatory anti-satellite strikes by the United States could render opposing military forces strategically deaf, dumb, and blind. Meanwhile, U.S. satellite networks, built for resiliency, would heal themselves with replacement launches.

So far, there’s little actual evidence either country is building up space weapons for a space “first strike.” Like any weapon, Russian and Chinese anti-satellite system may be a form of insurance in case war does spread to space. War in space might be disastrous for all countries, but in the event of war it would be most disastrous to Russia and China.

And nobody knows it better than Moscow and Beijing.