



Eye in the Sky Remotely Piloted Plane Makes it Safe to See Dangers



China Lake, CA (Naval Air Warfare Center Weapons Division) -- The Scan Eagle is an unmanned aerial vehicle (UAV) and one of the military's smallest airplanes, weighing 40 pounds. It flies over dangerous areas taking high-quality surveillance videos. Because it is unmanned, pilot casualties are avoided while the video alerts people on the ground of potential dangers. Engineers test payloads and fly the Scan Eagle remotely.

"The main purpose of being here is to support the people out in the battlefield."

Tony Fabiszak, aerospace engineer

Framework

Middle School

Standards

- NSES - B.ii.1 ➤ The motion of an object can be described.
- STL - 9.H ➤ Testing and evaluating are done.
- STL - 17.H ➤ Communication systems allow information to be transferred.
- STL - 18.G ➤ Transportation vehicles are made up of subsystems.

Content Illustrated

- Scan Eagle is launched from a catapult and caught on the Sky Hook.



Illustrated Content



Physical Science

- An air-pressure catapult launches the Scan Eagle. The air pressure needed for the catapult is based on the plane's weight and the day's weather. The appropriate pressure will get the plane to accelerate to 50 mph for launch.

Earth & Space Science

- The Global Positioning System allows objects to be located anywhere on Earth.

Technology

- The Scan Eagle weighs 40 lbs and can fly all day on 1.5 gallons of gas.
- It carries a GPS navigation system and a high-resolution video camera mounted on a gimbal (pivoting support). It also can carry other equipment (payloads) such as sensors, cameras, and radios.
- It is operated remotely, from up to 60 to 90 miles away.
- It cruises at 5,000 feet but can fly as low as 1,000 feet.
- The Scan Eagle doesn't take off and land like a typical airplane. It is launched with an air-pressure catapult and lands with a sky hook.
- It is used for surveillance and to provide information about whether soldiers on the ground should be alerted to potential dangers.
- Control operators can point and click on a map to navigate the plane. They also monitor the plane's speed, altitude, and engine function.

Engineering

- Engineers test and evaluate the Scan Eagle and its payloads to ensure everything is working well before it goes out to support soldiers in the field.
- Payload operators monitor the surveillance equipment and information, communicating with soldiers on the ground as needed.
- The catapult and sky hook allow the Scan Eagle to be deployed easily.

Guiding Questions

To think about as you watch:

- What types of information must be communicated between the Scan Eagle and the remote pilot?
- How much air pressure do you think the catapult needs to launch the Scan Eagle?

Suggested Activities

- Find the GPS location of your classroom.

Keywords

catapult
Global Positioning System
gimbal
high-resolution camera
payload
Scan Eagle
sky hook
unmanned aerial vehicle

➤ *Eye in the Sky* can be found online at www.ndep.us/Eye-in-the-Sky. Visit www.ndep.us/LabTV for a list of process skills modeled in webisodes.