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The Ekranoplan

THE Ekranoplan is a new transportation vehicle that has the fuel efficiency and carrying capacity of a ship coupled with the speed and maneuverability of an airplane. It was originally designed as a Russian military transport with 10 huge jet engines, a 300' fuselage, and a 120' wingspan. Can you imagine an airplane the size of a football field?

U.S. intelligence experts discovered this craft on a spy satellite transmission. They filmed the plane flying 6' above the water at a speed of 500 mph. The first commercial version of this Russian craft is much smaller than the one that our satellites originally photographed. This strange craft isn't just another airplane, however, but rather a new water transportation vehicle not intended for land use.

Early aerodynamic airplane research discovered that at takeoff a strange air cushion develops. This phenomenon, named the ground effect, actually cuts the drag of the airplane by about 70 percent as it increases the vehicle's lift. This means that if a pilot were to keep an airplane within air cushion height, the plane would operate with unbelievable efficiency.

Experimental prototypes of a ground effect aircraft are called Wingships in America, WISES (Wing in Surface Effect Ship) in Japan, and AGEC (Aerodynamic Ground Effect Craft) in Germany. The name Ekranoplan comes from "Ekran," the Russian word for ground effect.

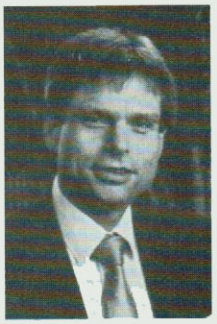
Although research into this type of craft exists in many nations, the Russians are the first to build a large working craft that is ready for commercialization. Remember, the hydrofoil and the hovercraft are not aircraft. The hydrofoil uses an underwater wing, called a foil, for lift and is not held in the air by an air cushion. Hovercraft do travel on a cushion of air but don't have the performance, efficiency, or ability to fly.

The commercial model of the Ekranoplan has two front jet engines that are aimed to force air under its stubby wings. The air is trapped there by the wings and the plane's body shape. Its main engine is mounted high on the tail to deliver forward motion. The Ekranoplan is 15 times faster and more fuel efficient than a ship of equal cargo-carrying capacity. It can also carry twice as much weight as any cargo plane currently in use. To avoid obstacles, this craft can leave its economy flying height and climb to 2,000'.

The Ekranoplan will be featured in September at Gelendzhik Expo 1996 on the Black Sea. It will receive full media coverage. A video recording of an Ekranoplan in flight could be an interesting technology education link between water and air transportation.

Recalling the Facts

1. What keeps the Ekranoplan just a few feet off the ground?
2. What does "Ekran" mean in Russian?
3. Describe the difference between a hovercraft, hydrofoil, and an Ekranoplan.
4. How large was the first Russian experimental Ekranoplan? TD



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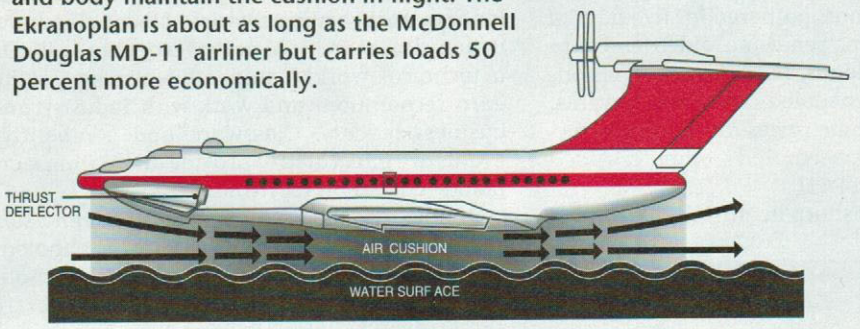
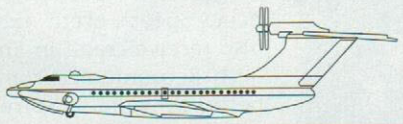
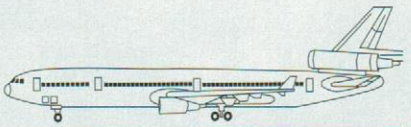
How to Fly on a Cushion

Jet engines with thrust deflectors aimed beneath the wings create the air cushion the Ekranoplan rides on at takeoff. The pressure of the wings and body maintain the cushion in flight. The Ekranoplan is about as long as the McDonnell Douglas MD-11 airliner but carries loads 50 percent more economically.







A.90.150 EKRANOPLAN	
Length	190.24 ft.
Wingspan	103.32 ft.
Height	52.48 ft.

MCDONNELL DOUGLAS MD–11	
Length	192.46 ft.
Wingspan	169.50 ft.
Height	57.75 ft.

Illustrations by Tony Mikolajczyk