

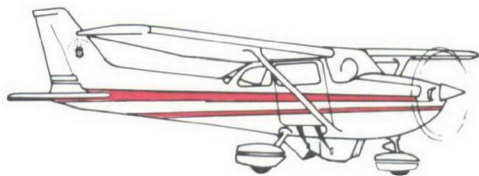


Research and Development

# Seeing is Believing







Nearly 100 years ago George Eastman introduced photography to the public with the phrase, "You press the button — We do the rest."

Cover Photograph:  
Hazardous Waste Site (Bruin Lagoon)

## Seeing is Believing

Aerial photographic imagery is an ideal medium for documenting the location and size of pollution sources and providing valuable information for determining the fate and effect of the released pollutants. But until now, obtaining these images for many applications was difficult and expensive. With technology developed by the EPA Environmental Monitoring Systems Laboratory in Las Vegas, Nevada (EMSL-LV), color, color infrared or black and white images of your area now can be

obtained at reasonable cost. The key is a two-camera observation system, Enviro-Pod, which can be conveniently attached to conventional light aircraft.

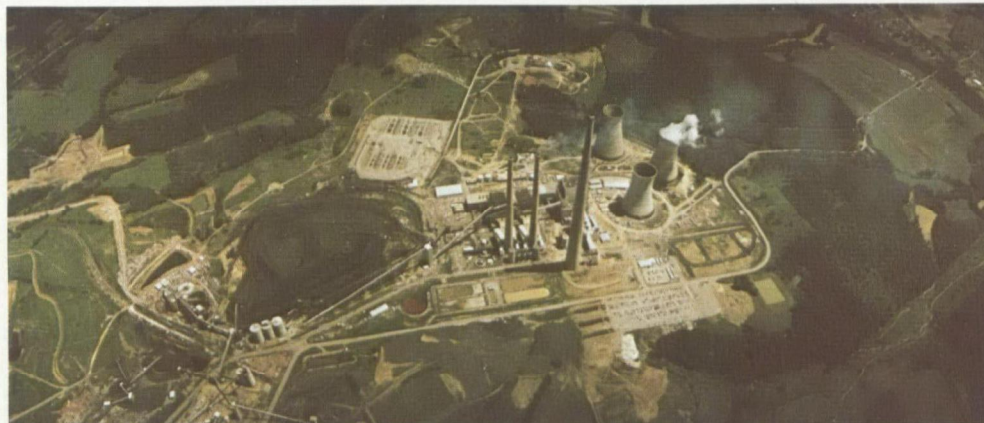
## Use of Enviro-Pod

Enviro-Pod allows users to obtain high-resolution images of industrial, hazardous waste, emergency episode and other activities which may impact human health or the environment of a community. The unique design of Enviro-Pod provides a

Color Infrared Photography of Hazardous Waste Site (Bruin Lagoon) from the Vertical Camera







Enviro-Pod Imagery of Power Plant from the Vertical- (above) and Forward-Looking Cameras  
Preparing Enviro-Pod for Installation on the Cessna

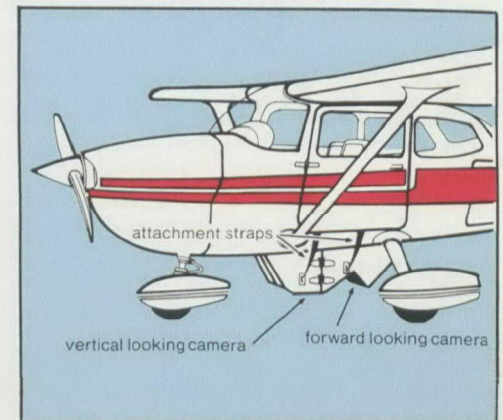


quick response system which is capable of reducing costs to a minimum yet retaining photographic quality. With only one of the Pod's two cameras and one complete roll of film (300 exposures), at a flight altitude of 10,000 feet, a swath of continuous photographic coverage can be obtained for a distance of approximately four hundred miles.

This capability is available to State and local officials through cooperative programs which can be arranged by EPA with the States. EPA will loan Enviro-Pods with two cameras to participating organizations and provide necessary support for demonstrating the effectiveness of the system for aerial monitoring. The State, however, will establish the administrative mechanisms for conducting monitoring missions and disseminating mission products.

Applications of the Enviro-Pod include:

1. Routine compliance monitoring and quick response to environmental emergencies.
2. Oil and hazardous materials spill detection, as well as reconnaissance of storage and containment sites.
3. Provision of imagery needed for environmental impact statements.
4. Support for abatement and enforcement actions.



The Enviro-Pod Secured to the Cessna





Enviro-Pod Imagery with Annotated Overlay



Plume from Outfalls into Chesapeake Bay (actual negative size)

## Training

Enviro-Pod aerial imagery, like all remote sensing methods, can be considerably more valuable when the equipment operators are trained and experienced.

The Environmental Photographic Interpretation Center (EPIC) in Warrenton, Virginia, a field station to the EMSL-LV, can train designated individuals in the installation, maintenance and operation of Enviro-Pod and provide various film processing services required for training and demonstration.

## Design

The Enviro-Pod is a compact, self-contained reconnaissance system designed to be secured to widely available Cessna 172 or 182 aircraft. According to the type of cameras and film used, the system can provide vertical and forward-looking color or black and white images of high resolution. No aircraft modifications are required. The entire system is FAA approved.

For flight, the Pod is mated to the outer surface of a Cessna by steel straps which

secure the Pod to the seat rails of the aircraft without interfering with door closure. The camera controls provide the option of automatic operation or individual exposures controlled by a switch. The Pod design has been adapted to accept other sensor systems such as television, thermal scanning and forward-looking infrared imaging as they are developed.

For more information on the Enviro-Pod contact the Director of the Environmental Photographic Interpretation Center (703-347-6624; FTS 8-557-3110), Warrenton, Virginia 22186.

## Scale Versus Area Covered (10% overlap)

Scale	Aircraft Altitude (ft.)	Area Covered (sq. mi.)	Area Covered (linear mi.)	Ground Resolution (ft.)	Objects Observed
1/2,000	500	6.6	16.2	0.12	individual pipes
1/10,000	2,500	164	80	0.6	outfalls, pipes
1/20,000	5,000	659	160	1.2	people, minor stacks, types of vehicles
1/40,000	10,000	2636	325	2.4	industrial components
1/48,000	12,000	3796	390	3.0	industry, major stacks, major outfalls