

**The Sky's  
The Limit!**



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## The National High Altitude Photography Program

Department of the Interior  
United States Geological Survey





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## The National High Altitude Photography Program

NHAP—The National High Altitude Photography program—is making recent aerial photographs, both black-and-white and color infrared, more easily accessible to you.

Designed to help you acquire high altitude photographs quickly and efficiently, NHAP can help you save valuable research time as well as help:

- Improve your resource management programs—from agricultural monitoring to pollution detection.
- Update your inventories of timber, mineral deposits, and other important natural resources.
- Identify manmade and natural features to help you make land management planning more effective.
- Interpret, evaluate, analyze, monitor, and control your resource projects more effectively.

### Begun in 1978

The NHAP program is a Federal multiagency activity

coordinated by the U.S. Geological Survey, Department of the Interior. The program was begun in 1978 by the participating agencies to save Federal funds by establishing a single national program to replace duplicate agency programs for acquiring aerial photographs.

Fourteen Federal agencies currently participate in the NHAP program by providing funds for the development of the photographic data base. A steering committee composed of representatives from selected agencies provides overall program guidance, while the U.S. Geological Survey manages the NHAP program.

The objectives of the NHAP program are to complete continuous coverage of the United States and develop a national photographic data base before the end of 1988, provide periodic updates of the data base, and ensure that the photographs are easily available to any interested user.

## NHAP Program Specifications

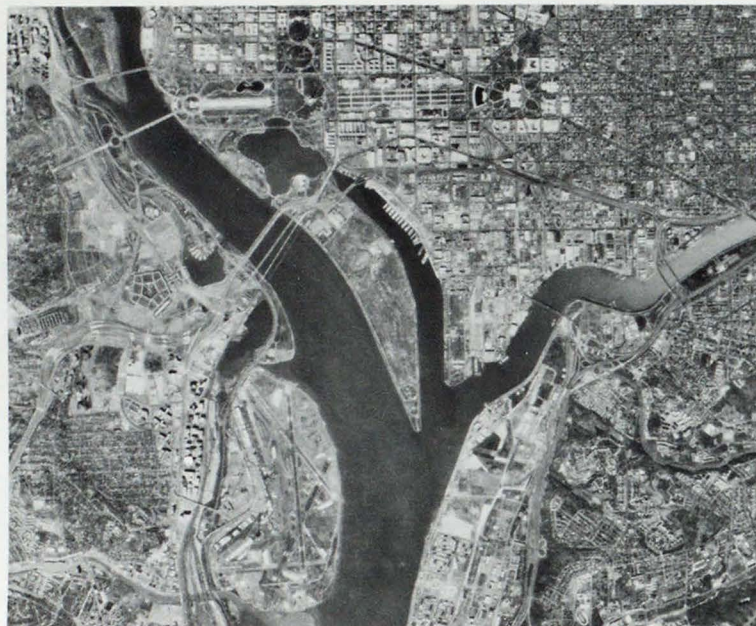
Product specifications for the NHAP program require that all photographs meet certain standards regardless of the area involved. A sun angle of 30° or more, for example, must be maintained to reduce shadow effects on the ground. Cloud cover must be absent, and atmospheric haze must be minimal. Even seasonal factors such as the presence of snow on the ground or the amount of foliage on trees are considered by the NHAP program mission planners.

Another important consideration is stereoscopic coverage. Stereoscopic photographs are achieved by overlapping successive pairs of photographs so that a three-dimensional view of the terrain, or stereomodel, is obtained when the photographs are viewed through a stereoscope.

Flight specifications for an NHAP mission require that the pilot follow pre-determined flight lines oriented in a north-south direction along the center lines of USGS

7.5-minute quadrangles. When the aircraft is over the appropriately spaced ground exposure stations, which have been established in advance by the mission planners, the photographer activates the shutters of the 6-inch and 8¼-inch cameras in the aircraft to make a series of exposures over each 7.5-minute quadrangle area. There are an average of three black-and-white exposures and four color infrared exposures for each 7.5-minute quadrangle.

Black-and-white coverage for the NHAP program is designed to provide an endlap in the north and south flight direction of 62 percent and a sidelap with photographs from the adjoining flight line of about 30 percent. Color infrared coverage is designed to provide an endlap of 65 percent and a sidelap of 10 percent. The amount of sidelap on both black-and-white and color infrared photographs varies with geographic latitude.



Washington, D.C. - NHAP 80 - Roll 330 Frame 15



Washington, D.C. - NHAP 80 - Roll 581 Frame 27

## Black-and-White and Color Infrared Available

Both black-and-white and color infrared photographs result from the NHAP program. The black-and-white photographs are widely used in map-making, as well as in geologic and land use analyses. Color infrared photographs are excellent for use in resource inventories, agricultural mon-

itoring, and pollution detection.

The photographs are in 9-by 9-inch format with black-and-white panchromatic and color infrared imagery exposed at 40,000 feet above mean terrain. The black-and-white film is exposed in a precision aerial camera

with a focal length of 15.3 cm (6 inches), producing a photograph at a scale of 1:80,000 (1 inch equals about 1.25 miles). Each black-and-white exposure covers nearly 130 square miles of terrain. The color infrared film is exposed in a second

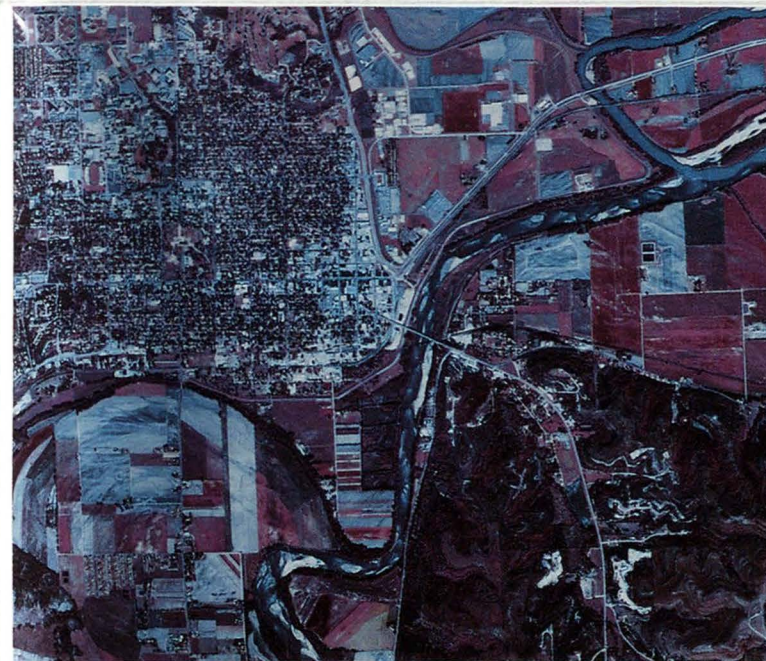
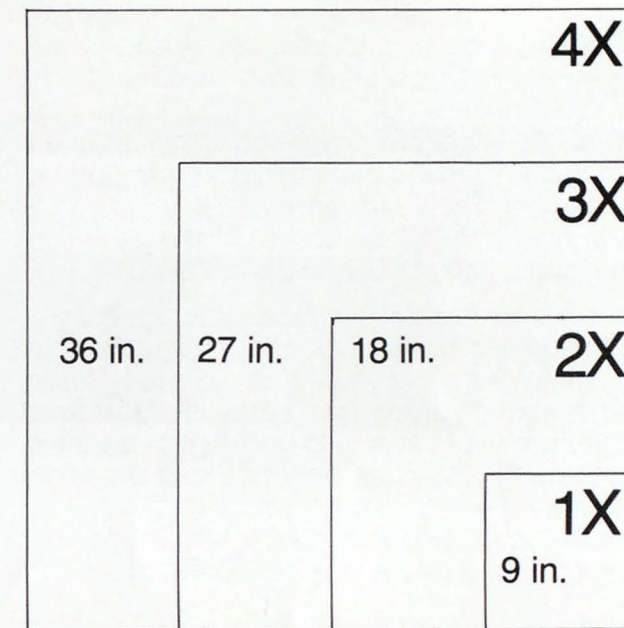
aerial camera with a focal length of 21.0 cm (8.27 inches), producing a photograph at a scale of 1:58,000 (1 inch equals about 0.9 miles). Each color infrared exposure covers nearly 68 square miles of terrain.

## NHAP Program Product Sizes and Indexes

Film transparencies or photographic reproductions of black-and-white and color infrared photographs are available in a 9- by 9-inch contact print size as well as in standard enlargement sizes of 2X (18 x 18 inches), 3X (27 x 27 inches), and 4X (36 x 36 inches). Special print sizes also can be ordered.

To aid in selecting and ordering photography, a comprehensive set of micrographic indexes to

the NHAP coverage, complete with mapline plots on 1:250,000-scale base maps, is available. The microfiche are keyed to the 1:1,000,000-scale International Map of the World Series Index and contain project year, roll, frame, and photographic identification information needed to order prints.



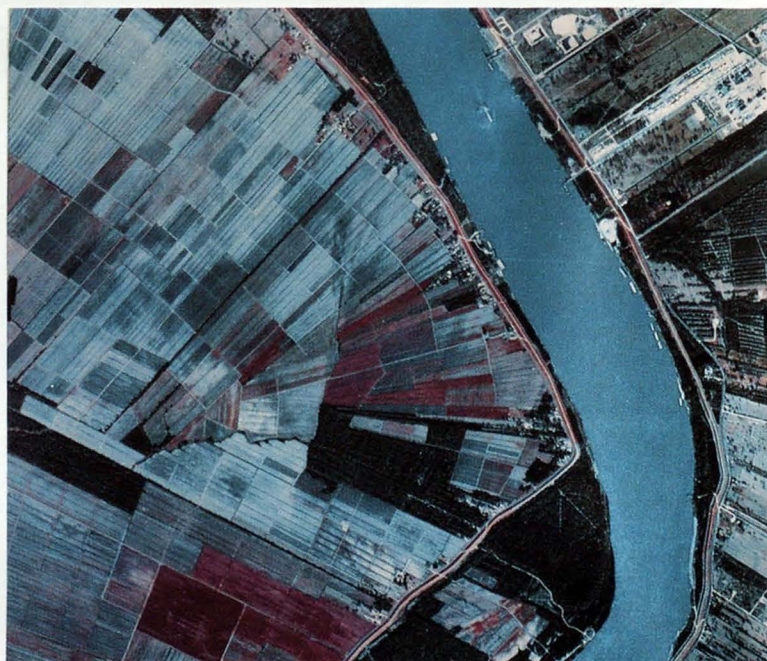
Manhattan, Kansas - NHAP 81 - Roll 157 Frame 69



Deadwood, South Dakota - NHAP 81 - Roll 457 Frame 118



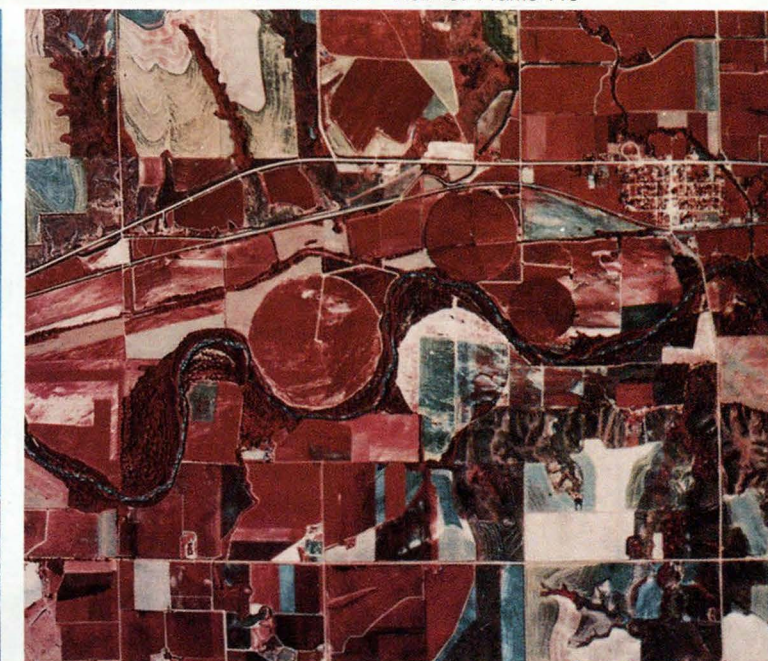
Washington and Humphreys Cos., Mississippi - NHAP 81 - Roll 297 Frame 127



Ascension Parish, Louisiana - NHAP 81 - Roll 291 Frame 45



N. Pensacola, Florida - NHAP 80 - Roll 335 Frame 140



Furnas Co., Nebraska - NHAP 81 - Roll 75 Frame 44

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## How to Order Products

You can order NHAP products directly from the EROS Data Center (EDC) in Sioux Falls, South Dakota, any one of six National Cartographic Information Centers or the Agricultural Stabilization and Conservation Service. For free information and micrographic indexes, please write to:

U.S. Geological Survey  
EROS Data Center  
Sioux Falls, South Dakota 57198

## Contributing Agencies

The following agencies have contributed funds to the National High Altitude Photography Program:

Department of Agriculture  
Agricultural Stabilization and Conservation Service  
Soil Conservation Service  
Statistical Reporting Service  
Forest Service

Department of Commerce/  
National Oceanic and Atmospheric Administration  
National Ocean Service

Department of Defense  
Army Corps of Engineers  
Defense Mapping Agency

Department of the Interior  
Bureau of Indian Affairs  
Bureau of Land Management  
Bureau of Mines  
Fish and Wildlife Service  
National Park Service  
Office of Surface Mining  
Geological Survey

Tennessee Valley Authority