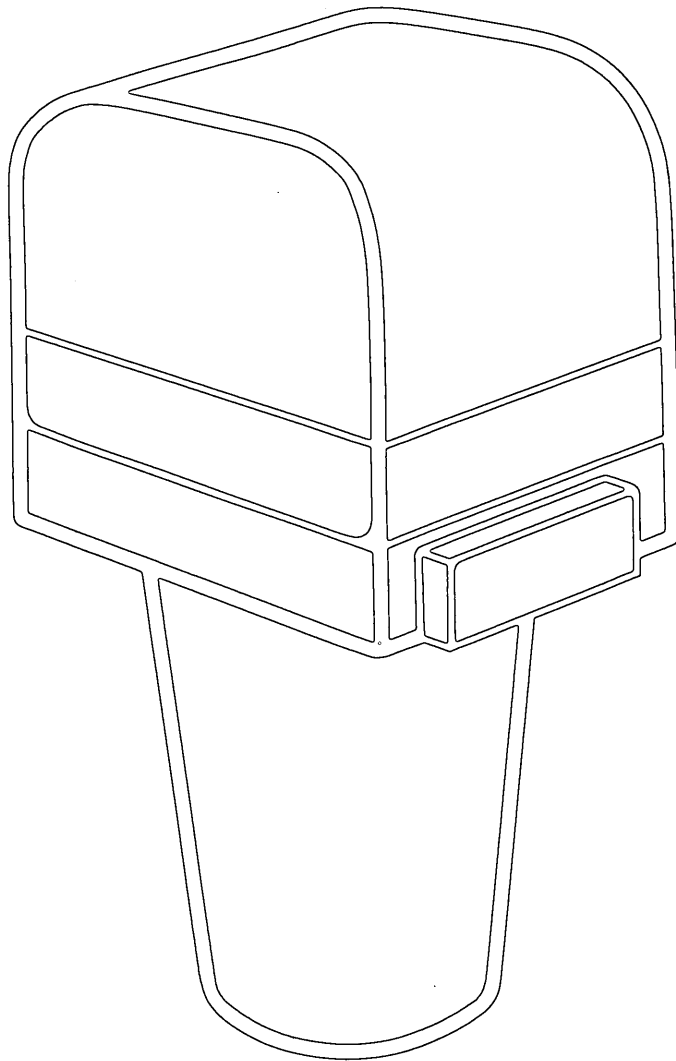


# APSR

## AERIAL PHOTOGRAPHY SUMMARY RECORD SYSTEM

### 4 NCIC Data Acquisition Guide





**NCIC DATA ACQUISITION GUIDE**

**THE AERIAL PHOTOGRAPHY SUMMARY RECORD SYSTEM**

**NATIONAL CARTOGRAPHIC INFORMATION CENTER  
U.S. GEOLOGICAL SURVEY  
507 NATIONAL CENTER  
RESTON, VIRGINIA 22092**



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**TABLE OF CONTENTS**

Table of Contents	iii	
List of Illustrations	iv	
Section 1	Introduction	1.1
	How APSRS works	1.1
	The summary record	1.1
	APSR output products	1.4
Section 2	Meeting with possible contributors	2.1
	Identifying possible contributors	2.1
	Planning visits	2.1
	Conducting visits	2.1
Section 3	Responsibilities	3.1
	Contributor responsibilities	3.1
	State affiliate responsibilities	3.2
	Mapping center NCIC responsibilities	3.3
	NCIC headquarters responsibilities	3.3

Data Acquisition Guide—APSR  
Table of Contents

iv

---

LIST OF ILLUSTRATIONS

Figure 1-1	County format .....	1.3
Figure 1-2	A tier of 7.5' quads .....	1.3
Figure 1-3	Example of four-corner format figures .....	1.4
Figure 1-4	Detail of TAG map, strip 4 .....	1.6
Figure 1-5	Example of a State-base graphic .....	1.7
Figure 1-6	Sample frame from the fiche index .....	1.8

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## 1. INTRODUCTION

The National Cartographic Information Center (NCIC) is the information branch of the National Mapping Program. NCIC gathers descriptions of cartographic products held by Federal, State and local agencies, and private companies. Computerized information systems are used to edit, store, and distribute these descriptions. The Aerial Photography Summary Record System (APSR) is NCIC's system for determining if photographs of a particular area, with a particular set of characteristics, are available, and if so, where they can be found.

This guide defines the procedures for planning and conducting visits to potential contributors to the APSRS data base. The guide also defines acquisition responsibilities of the contributor, State affiliates, mapping centers, and NCIC headquarters.

As a Data Acquisition specialist, you are encouraged to seek innovative approaches to acquiring data and to suggest additions or changes to this guide.

### HOW APSRS WORKS

Contributor data is supplied through one of two channels:

1. Most contributors prepare descriptions of their photographs using APSRS codes and formats and send the descriptions to NCIC Reston (via the mapping centers).
2. Some contributors send their aerial film to the EROS (Earth Resources Observation System) Data Center (EDC) for entry into EDC's Main Image File. Periodically, a copy of computerized information on this file is sent to NCIC Reston.

Whether received directly from the contributor or from EDC, the data is processed by NCIC and recorded in the APSRS summary record file. This file is used to generate computer-produced catalogs, graphics, microfiche listings, and special query answers.

### THE SUMMARY RECORD

The summary record is the basic building block of APSRS. These records are described in the following question and answer series.

## Data Acquisition Guide—APSR

### 1. Introduction

#### 1.2

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#### **What is a summary record?**

A summary record is a description of a similar group of aerial photographs, often an aerial photo project covering a specific geographic area.

#### **What does a summary record tell about the photographs it describes?**

Basic information such as: who holds the photographs, when they were taken, the scale and type of film, the project designation, and a few other items.

#### **Does a single summary record contain information on all of the photographs taken during one project?**

Frequently, but not always. To be included in one summary record the photographs must have the same characteristics and cover an area which can be defined by one summary record. When this is not possible, the photographs are divided into sets and a separate summary record is prepared for each set.

#### **Does APSRS keep records on planned projects?**

Yes. Each summary record has a status code which indicates whether the project is planned or completed.

#### **How are contributor inputs prepared?**

Typically, each agency or business has its own records which describe their photographs. Contributor personnel use these records to write descriptions of projects on NCIC supplied code sheets.

#### **How is the area covered by the projects defined in a summary record?**

Generally, projects are defined in one of three formats: county, 7.5' quad, or four-corner.

- **County format.** When projects consist of aerial photographs of one entire county, the county format is used to describe the project.



A special code in the summary record identifies the county. (See figure 1-1.) When coverage includes more than one county or only part of a county, another format is used to define the photography.

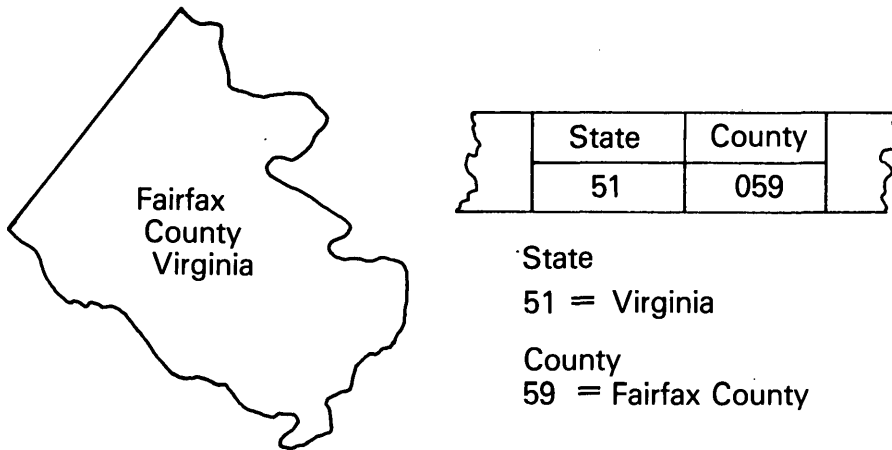


Figure 1-1. County format

— **7.5' quad format.** 7.5' means 7 1/2 minutes, which is one-eighth of a degree. In APSRS a "quad" is a rectangle 7.5' high and 7.5' wide (same dimensions as USGS topographic map quadrangles). This format defines a single quad or a "tier" of quads running south to north. For the 7.5' quad format the user specifies the number of quads in the tier and the coordinate (latitude and longitude) of the southernmost tier. (See figure 1-2.)

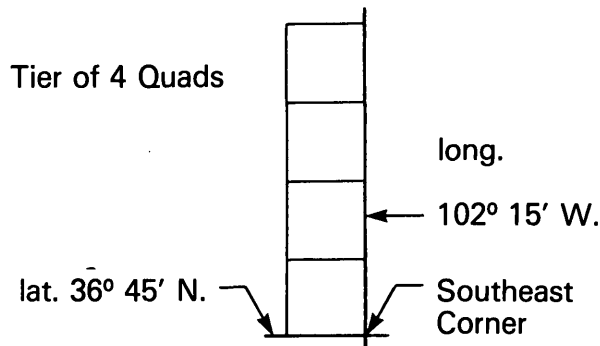


Figure 1-2. A tier of 7.5' quads

## Data Acquisition Guide—APSR

### 1. Introduction

#### 1.4

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- **Four-corner format.** This format lets the user define an area of coverage as a quadrilateral (four-sided figure). The area can be any size or shape bounded by four straight lines as long as no interior angle is greater than  $180^\circ$ . For this format the user lists the coordinates of the four corner points. Figure 1-3 shows two examples of quadrilaterals (corner points are marked A, B, C, and D).

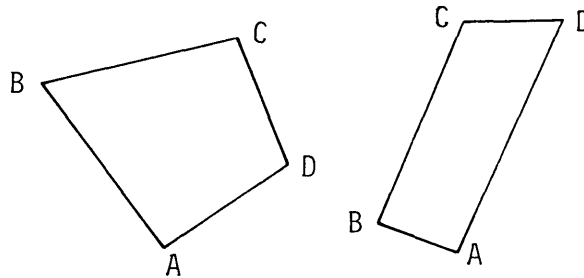


Figure 1-3. Examples of four-corner format figures

#### **Are geographic areas in the summary record defined the same way on APSRS output products?**

No. There is a basic difference. In APSRS output products the information is always related to a single 7.5'-quad cell.

#### **How is summary record information broken down to single 7.5'-quad cells?**

Through an internal computer process called an "explosion run." This run takes the geographic area defined in each summary record and divides it into 7.5' cells by creating a record for each 7.5' cell contained within the area.

### **APSR OUTPUT PRODUCTS**

The information contributors send to the summary record file are used to prepare catalogs, State-base graphics, fiche indexes, and customer queries. These are used by both NCIC and the public.

## **Catalogs**

The catalogs are maps which show the availability of aerial photographs. Currently, four different catalogs are produced; each covering a 15° longitudinal “strip” of the 48 contiguous States. Each catalog contains eight maps. One map identifies planned projects and a second shows the number of times the quadrangle has been covered. The remaining six show completed projects taken in various time ranges at various scales.

The maps are referred to as TAG (tabular and graphic) maps. Each map contains symbols (letters or numbers) identifying the organization with the earliest planned or most recent coverage (See figure 1-4). Each symbol is positioned within one 7.5'-quad cell on the map. If there are no records within the date-scale range of a map, the related 7.5' cells are blank.

## **State-base graphics**

State-base graphics are page-size map indexes that display coverage over a small area, generally a State or two. Up to 21 different categories of scale range, decade of coverage, new photographs, and planned projects will be printed out for each area. The graphics have two reference systems to help locate specific geographic areas; the county boundary plot and a 1° lattice of latitude and longitude lines (See figure 1-5).

## **Fiche index**

The fiche index is a microfiche file of detailed information about every photographic project in APSRS. Figure 1-6 shows a sample fiche index frame.

While the catalogs indicate only the most recently or earliest planned coverage, the fiche index shows all coverage. The fiche index also contains information not shown in the catalogs, such as image scale, date of coverage, and film type.

The fiche are divided into sets that match the four catalogs. Within each set are subsets that match each TAG map. The individual frames in each fiche and the lines on each frame are geographically sequenced to match the south-north tiers on the TAG maps (See figure 1-6).

# Data Acquisition Guide—APSR

## 1. Introduction

### 1.6

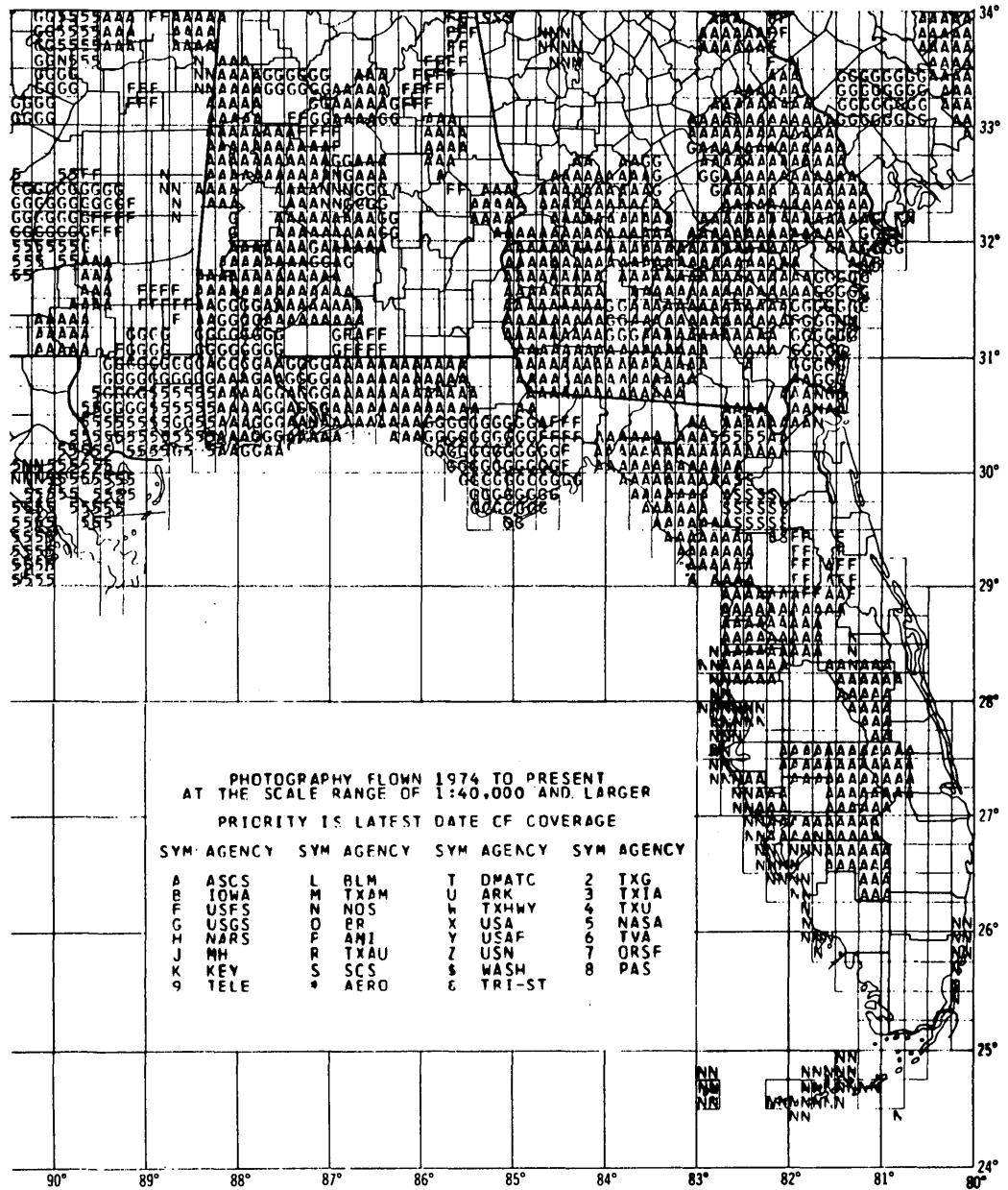


Figure 1-4. Detail of TAG map, strip 4

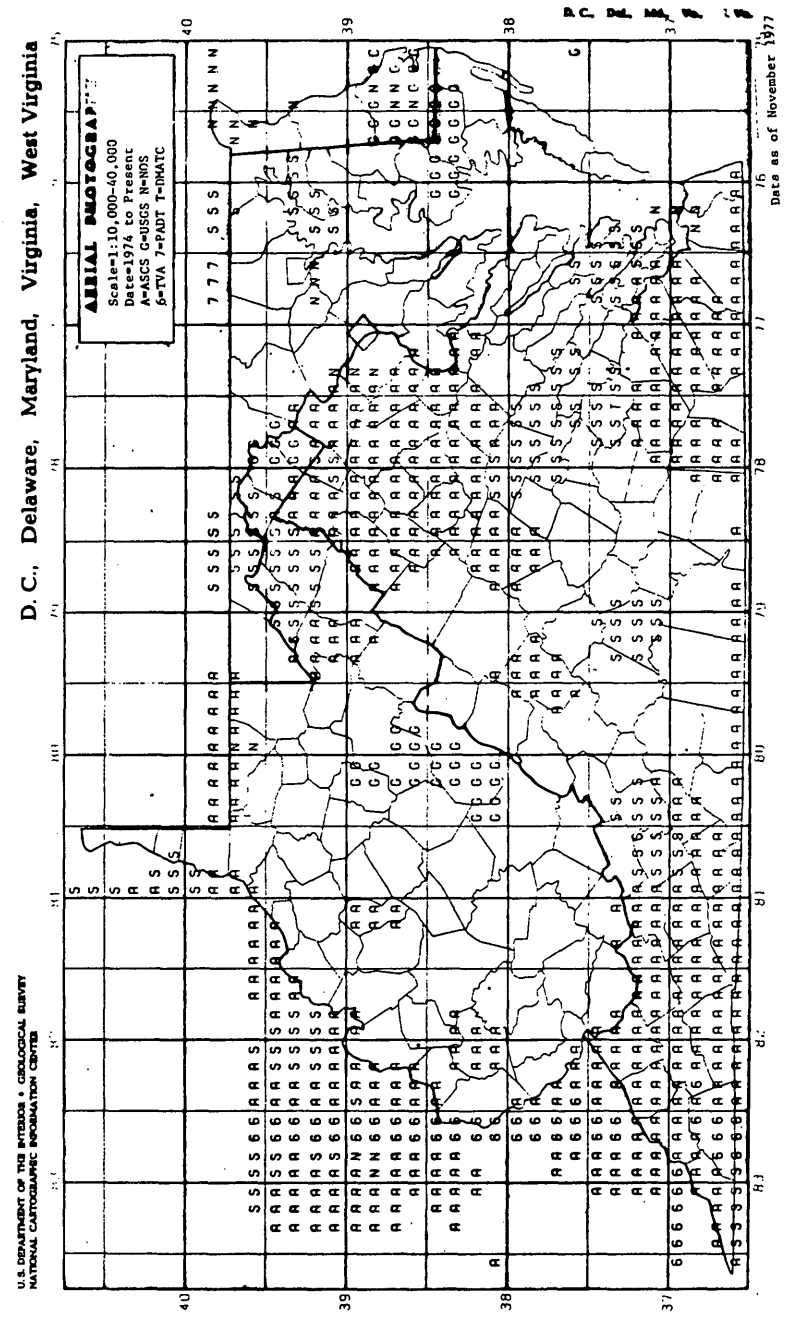


Figure 1-5. Example of a State-base graphic

Data Acquisition Guide—APSRs

1. Introduction

1.8

DATE: 12/08/77

INDEX CROSS REFERENCE

PAGE 67

AGENCY	HP1	ST	CURNER	FIPS	DATE OF	AGENCY	IMAGE	FUCAL	FILM	FILM	SENS	CLOUD	CAM	QUAD	REMARKS OR												
LUDEL	TRF	UDG	LAT	LUDEL	LVLRG	PROJECT	SCALE	LENGT	TYPE	FMT	CLAS	LOVER	SPEC	COVER	SCENE												
LUDEL	TRF	UDG	MIN	UDG	MIN	CLD	ST	CITY	YR	MO	DAY	STA	CODE	SCALE	LENGT	TYPE	FMT	CLAS	LOVER	SPEC	COVER	IO	FRAMES	TO	CASSETTE	NI.	FRAME
USGS	2	2	35 36	119 30		76 11 29	3	VEGU	80000	04	4	3	1	0	580242												
USGS	2	2	35 22	119 30		76 11 29	3	VEGU	80000	04	4	3	1	0	580244												
USGS	2	2	35 15	119 30		76 11 29	3	VEGU	80000	04	4	3	1	0	580246												
USGS	2	2	35 07	119 30		76 11 29	3	VEGU	80000	04	4	3	1	0	580246												
USGS	2	2	35 00	119 30		76 11 29	3	VEGU	80000	04	4	3	1	0	580246												
USGS	2	2	34 37	119 30		76 11 29	3	VDWK	80000	04	4	3	1	0	570896												
USGS	2	2	34 30	119 30		76 11 29	3	VDWK	80000	04	4	3	1	0	570896												
USGS	2	2	34 22	119 30		76 11 29	3	VDWK	80000	04	4	3	1	0	570897												
USGS	2	2	34 15	119 30		76 03 23	3	RC4	30000	04	3	3	1	0	Y	4	SELOS ANGELES										
NIS	2	2	34 07	119 30		76 03 15	3	BR2	30000	04	1	3	1	0	Y	4	SELOS ANGELES										
NIS	2	2	34 00	119 30		76 03 12	3	RC1	30000	04	3	3	1	0	Y	5	SELOS ANGELES										
NIS	2	2	34 22	119 30		76 03 12	3	BR1	30000	04	1	3	1	0	Y	6	SELOS ANGELES										
ASCS	1	2	48 00	119 22	53 017	76 06 18	3		40000	04	4	3	1	0	Y	5	11										
ASCS	1	2	47 52	119 22	53 017	76 06 18	3		40000	04	4	3	1	0	Y		11										
ASCS	1	2	47 45	119 22	53 017	76 06 18	3		40000	04	4	3	1	0	Y		11										
ASCS	1	2	47 37	119 22	53 017	76 06 18	3		40000	04	4	3	1	0	Y		11										
ASCS	1	2	47 30	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y	6	12										
ASCS	1	2	47 22	119 22	53 017	76 06 18	3		40000	04	4	3	1	0	Y	3	11										
USGS	2	2	47 22	119 22		76 06 30	3	VEGJ	78000	04	4	3	1	0			560940										
ASCS	1	2	47 22	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y		12										
USGS	2	2	47 15	119 22		76 08 30	3	VEGJ	78000	04	4	3	1	0			560940										
ASCS	1	2	47 15	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y		12										
USGS	2	2	47 07	119 22		76 08 30	3	VEGJ	78000	04	4	3	1	0			560944										
ASCS	1	2	47 07	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y		12										
USGS	2	2	47 00	119 22		76 08 30	3	VEGJ	78000	04	4	3	1	0			560944										
ASCS	1	2	47 00	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y		12										
ASCS	1	2	46 52	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y		12										
ASCS	1	2	46 45	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y		12										
ASCS	1	2	46 37	119 22	53 025	76 06 18	3		40000	04	4	3	1	0	Y	4	12										
NASA	3	2	44 52	119 22		76 08 10	3	02401	31000	07	2	3	2	1	4	576002401	0117	0119	0213	0757							
NASA	3	2	44 52	119 22		76 08 10	3	02401	30000	07	2	3	2	0	8	576002401	0113	0116	0213	0753							
NASA	3	2	44 45	119 22		76 08 10	3	02401	30000	07	2	3	2	0	3	576002401	0113	0116	0213	0753							
NASA	3	2	44 37	119 22		76 08 10	3	02401	30000	07	2	3	2	1	8	576002401	0121	0129	0213	0761							
NASA	3	2	44 30	119 22		76 08 10	3	02401	29000	07	2	3	2	0	2	576002401	0221	0223	0213	0861							
NASA	3	2	44 22	119 22		76 08 10	3	02401	30000	07	2	3	2	0		576002401	0218	0220	0213	0858							
NASA	3	2	44 15	119 22		76 08 10	3	02401	31000	07	2	3	2	0	2	576002401	0212	0217	0213	0852							
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NASA	3	2	44 00	119 22		76 08 10	3	02401	30000	07	2	3	2	1	8	576002401	0227	0233	0213	0867							
NASA	3	2	44 00	119 22		76 08 10	3	02401	31000	07	2	3	2	1	3	576002401	0224	0226	0213	0864							
NASA	3	2	43 52	119 22		76 08 10	3	02401	30000	07	2	3	2	3	7	576002401	0298	0304	0213	0938							
NASA	3	2	43 30	119 22		76 08 10	3	02401	29000	07	2	3	2	0	4	576002401	0328	0338	0213	0968							
NASA	3	2	43 15	119 22		76 08 10	3	02401	29000	07	2	3	2	0	9	576002401	0047	0053	0213	0687							
USGS	2	2	37 52	119 22		76 10 10	3	VDYH	80000	04	4	3	1	0	580108												
USGS	2	2	37 45	119 22		76 10 10	3	VDYH	80000	04	4	3	1	0	580106												
USGS	2	2	37 37	119 22		76 10 10	3	VDYH	80000	04	4	3	1	0	580108												
USGS	2	2	37 30	119 22		76 10 10	3	VDYH	80000	04	4	3	1	0	580108												

Figure 1-6. Sample frame from the fiche index

Custom queries

There are cases in which the catalog, fiche index, or State graphics are not the best products for answering detailed questions. Suppose, for example, a customer asks:

“What coverage is available of the Florida panhandle taken with a calibrated camera using color film?”

The catalogs or State-base graphics do not show all the types of information needed to answer this question. The fiche index could be used, but a great deal

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of time and effort would be needed to examine the records for an area this large. Instead, a custom query, or computer search of the APSRS data base is made to research complex questions involving large areas.

Custom queries allow the user to specify the particular information needed about existing projects. When a query is formulated and processed by a batch-type computer search, a map graphic and/or listing is produced which contain(s) **only** the information requested.

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## 2. MEETING WITH POSSIBLE CONTRIBUTORS

This section provides guidelines for data acquisition personnel who are planning visits to potential APSRS contributors.

### IDENTIFYING POSSIBLE CONTRIBUTORS

Data Acquisition in Reston maintains a list of possible contributors. This list is organized by State and in alphabetical order shows Federal, State and local agencies, and private companies. Mapping center NCICs should develop an expanded list of possible contributors known at the regional level. Similarly, State affiliates should expand upon the mapping center lists.

A list of Government agencies that have already agreed to contribute information to APSRS also is maintained by NCIC Reston. As agency branches are not always aware that their agencies have entered into agreements, NCIC personnel must be aware of any agreements in effect when visiting the branch offices.

Use these lists and any local sources you have to identify possible contributors within your area.

### PLANNING VISITS

Plan one to two week trips to visit agencies and companies in the same geographic area. Write or call organizations in advance to explain the purpose of the visit and to set a specific time and date. Arrangements for visits to State or local agencies, or private firms within an affiliated State, should be made through the State affiliate. Whenever travel arrangements permit, plan two visits for each working day.

### CONDUCTING VISITS

Start each visit with a general presentation on NCIC. This should include a review of the types of services and cartographic information available through NCIC. A detailed description of APSRS should be presented which covers:

- the general concept of summary records and their contents (use sample code sheets as illustrations)



2.2

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- geographic formats, stressing the fact that the four-corner format was specifically designed to permit definition of large areas with a minimum number of summary records
- status and other codes
- edit and correction features of the system
- system outputs: the catalogs, State-base graphics, fiche index, and custom queries.

Show the catalogs and explain their use pointing out that the TAG maps contain only a small amount of the information that can be found in the microfiche and by custom queries. Emphasize that custom queries can be printed on request.

At the conclusion of your presentation, leave a set of TAG maps and code sheets for further study. Then suggest that the organization become a contributor. Since contributing to APSRS is voluntary and at the contributor's own expense, suggest possible participation benefits. Remember, the benefits that may be the most compelling vary depending on the organization.

### **Economic benefits**

The economic benefits of participation are usually the most inviting reasons for joining APSRS. First, contributors can avoid the expense of duplicating existing photographic coverage. NCIC provides contributors with a complete set of microfiche indexes for their area of interest without charge. The indexes contain enough detail to decide if existing coverage serves a contributor's purpose.

A second economic benefit comes from an organization being able to publicize its own planned coverage which often leads to joint projects and reduced costs for each contributor. However, while private firms will be interested in the planned projects of others, be aware that they may be unwilling to publicize their own future plans.

### **Technical support**

NCIC provides a variety of support services to contributors. Training courses and workshops with practical exercises are held to assist new contributors in understanding summary record formats, input and editing procedures, and

interpretation of outputs. Emphasize that a Contributor Guide is distributed with step-by-step instructions for those operations. NCIC also performs a limited computer edit of contributor records to aid input accuracy.

### **Professionalism**

A further and sometimes overlooked incentive is an appeal to the professionalism of those involved. Members of the American cartographic community are proud of the quality of their products. One form of recognition for those accomplishments is the demand for their products by colleagues in other agencies or businesses. By becoming APSRS contributors, they are assisting their fellow professionals and reaching a wider audience. The cartographic community is a relatively small, close-knit, and cooperative one and this type of appeal can be effective.

### **Other considerations**

Emphasize that APSRS procedures are designed to minimize a contributor's workload. To illustrate, review again the ease with which the four-corner format can be used to define large geographic areas and to break up irregularly shaped coverages. Point to the technical support services that further simplify the job. In short, the contributor should be made to realize that participation is not difficult and that the benefits more than justify the work involved.

Conclude the visit by making whatever follow-up arrangements are appropriate. Leave the name, address, and telephone number of an NCIC representative with the organization.

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### 3. RESPONSIBILITIES

This section defines the responsibilities of contributors, State affiliates, mapping center NCICs, and NCIC Reston.

#### CONTRIBUTOR RESPONSIBILITIES

Contributors assume certain responsibilities. They must be willing to answer requests for information about their aerial photographs. They also must make copies of their photographs available for purchase. Willingness and an ability to respond to such requests is required to become a contributor.

Contributors must have photographs that are of interest to a wide variety of users. Most aerial photographic projects meet this criterion. Two exceptions are projects with:

- coverage of less than 50 square miles. At present, NCIC's priorities prevent including photographs of small areas,
- coverage taken to meet just one special purpose. Examples are projects that show only snow coverage or meteorological phenomena over an area.

Contributors must be willing to encode data using prescribed data elements and codes. Magnetic tape is the preferred medium, punch cards are an acceptable alternative. Code sheets also are acceptable if the data cannot be submitted in one of the other forms. Also, NCIC now has limited capacity to encode data from indexes or catalogs. Each candidate film file must be judged individually after telephone contact with the Chief, Data Acquisition in Reston.

Contributors must be willing to be responsible for the accuracy of summary records describing their holdings. As a service to contributors, NCIC conducts a partial computer edit of all inputs. Transactions with missing or obviously incorrect information result in computer-generated error messages which are sent to the contributor, who is expected to correct and resubmit the data.

The computer edit cannot detect all types of errors. So, in addition to the error messages, each contributor is sent a file maintenance report that shows how his transactions were processed by the computer. He is expected to verify that report against his own records.

## Data Acquisition Guide—APSR

### 3. Responsibilities

#### 3.2

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Contributors are encouraged to submit records as soon as a project is planned or completed. Contributors must be willing to review and update the coverage and status of their records at least twice a year, and also are expected to verify the current status of any project on request.

There will be cases where a possible contributor has coverage of broad interest and substantial value, but cannot meet one or more of the above responsibilities. An example would be color-infrared photographs of an entire State held by an agency that lacks both the resources to encode the data and an outlet to make the film available to users. In such cases, Data Acquisition personnel will create the summary records to define the coverage and see if it is possible to obtain the original or copies of the film for the EROS Data Center archives. Data Acquisition in Reston should be consulted when such cases arise.

Frequently, a possible contributor expresses interest in entering data but has doubts about encoding a large backlog of existing holdings. In this case, urge the contributor to enter the existing data, and then to stay current. The backlog can be encoded later.

### **STATE AFFILIATE RESPONSIBILITIES**

An NCIC State affiliate may be a major holder of cartographic materials, a newly created agency, or it may be an added responsibility for a State university or archival agency. Wherever the center is placed organizationally, it is expected to serve as the State's central cartographic information center.

Affiliate responsibilities include finding new contributors and serving as the channel for all inputs from organizations located in the State. Affiliates also are encouraged to serve as the first point of contact within the State for organizations who have questions about aerial photographic coverage. (NCIC will continue to respond to inquiries addressed directly to its offices.)

No contacts should be made with organizations within an affiliated State without first contacting the affiliate. When NCIC personnel wish to visit possible contributors in the State, they will try to make joint State-NCIC visit or make the initial visit arrangements through the affiliate. Technical assistance and guidance from NCIC is provided at no expense to the affiliate.

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### **MAPPING CENTER NCIC RESPONSIBILITIES**

Mapping center NCICs are expected to actively recruit new contributors to APSRS. Mapping center NCICs also are required to conduct workshops to train affiliate and contributor personnel, and to offer technical advice and guidance on a continuing basis. Finally, mapping center NCIC personnel are expected to visually check contributor encoding sheets for obvious errors—such as alphanumeric letters in a scale field.

### **NCIC HEADQUARTERS RESPONSIBILITIES**

NCIC will maintain and operate APSRS. This includes: assigning agency codes; editing and processing new records and updating transactions; sending error messages and file maintenance reports to contributors, and generating and distributing APSRS encoding specifications, code sheets, and output products.