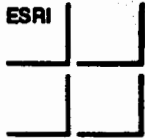


ESRI



# ARC/TECH

**Technical Newsletter**

**Issue No. 1, Fall 1987**

## **EDITOR'S CORNER by Dixie Hardy**

Welcome to the first issue of ARC/TECH, the technical newsletter for the ARC/INFO user community. We would like this newsletter to be a forum for exchange of information and ideas that help people more effectively use ARC/INFO. Also, we expect ARC/TECH to help ESRI respond to your needs by increasing the communication between ARC/INFO users and the technical staff at ESRI. We want ARC/TECH to support Regional User Group communication and activities.

Many of you are familiar with the ESRI Newsletter, a publication reporting on general GIS developments and ARC/INFO applications around the world. The focus of ARC/TECH however, will be on providing technical support to the hands-on ARC/INFO user. It will supplement ESRI's telephone hot line and training courses.

Your contributions and suggestions are vital to the development and maintenance of an informative newsletter focused on the needs of hands-on ARC/INFO users. Future *User's Corner*, *Technical Tips*, and *Regional Group Spotlight* columns are dependent on users contributing material. To help evaluate your response to this newsletter, we have enclosed an addressed reader survey. Based on your response, we will publish another ARC/TECH issue incorporating your suggestions and articles. Please share your ARC/INFO experience by submitting your ideas and articles to me at ESRI Redlands.

## **REGIONAL USER GROUP SPOTLIGHT**

At the 1987 ESRI Users Conference, it was evident that the time for regional groups had arrived. Several groups were already formed and others were in the process of forming. This October several regional groups held their own user conferences. At ESRI, we see this as a positive step and want to support regional user groups in this direction.

To get in touch with a regional group, contact the following people by telephone, letter or electronic mail.

Three regional groups are actively using the electronic mail system. Alaska announces their meetings and keeps a list of enhancement requests for ESRI in its mailbox. The CA/HI/NV group has published an electronic newsletter in their mailbox. The Northeast group announced their conference by electronic mail.

## **REGIONAL USER GROUPS**

Alaska - Earl Nordstrand  
North Slope Borough (907) 279-9505

Australia - Ron Hutchinson  
ESRI Australia 61-9-322-4955

CA/HI/NV - Chuck Johnson  
US BOR Sacramento (916) 978-5063

Canada - Alex Miller  
ESRI Canada (416) 441-6035

Europe - Joerg Schaller  
ESRI Munich 08166/3372

Midwest - Paul Tassar  
Minnesota LMIC (612) 297-2487

Northeast - Gary Smith  
University of Vermont (802) 656-3092

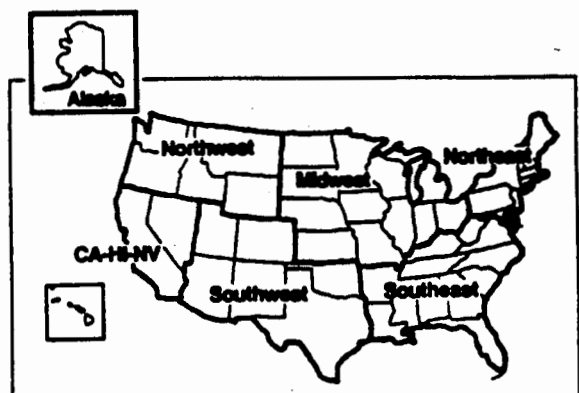
Northwest - Doug Niebert  
USGS - WRD, OR (503) 231-2075

Dean Anderson  
ESRI Northwest (206) 754-4727

Southeast - Cliff Whitehead  
Tennessee WRA (615) 360-0599

Chuck Killpack  
ESRI Southeast (704) 541-9810

Southwest - Ted Talmon  
Albuquerque, NM (505) 764-1588



## ELECTRONIC ARCMail

There are now 150 ARC/INFO user mailboxes in the electronic mail system. Earl Nordstrand and Barry Zikhur of the North Slope Borough, Alaska, maintain the program. ESRI makes this fast, efficient means of communication available to all users. Currently you can: consult the electronic bulletin board for news on new releases and known problem reports; read your regional group newsletter; plan regional group meetings and activities; trade AML and SML programs; send questions to ESRI User Support; and find out who may have available data or equipment you need.

ESRI will be implementing a full service electronic mail system for ARC/INFO users as a permanent feature. This technology is the alternative to slow conventional mail and expensive voice telephone service. ESRI is currently evaluating options to provide improved and expanded electronic mail. The next issue of ARC/TECH will have more information about our plans for electronic mail. If your site wishes to obtain a mailbox, call Andy Norton in ESRI User Support, (714) 793-2853.

## COMMENTS ON COMING ATTRACTIONS

Have you heard a rumor that CLEANing in ARC/INFO 4.0 may be obsolete? This rumor, as with most rumors, is a kernel of truth surrounded by misconception. INTERSECTARCS, NODESNAP, ARCSNAP and other 4.0 ARCEDIT commands will reduce, but not eliminate, the need to execute CLEAN. A freshly digitized manuscript, particularly a complex one, will still need to be CLEANed and checked for node errors. However, the increased

functionality of ARCEDIT will make digitizing easier, faster and less prone to error, and it may eliminate the need to CLEAN after subsequent editing of the coverage.

ARCEDIT 4.0 will intersect arcs "on the fly" when you set INTERSECTARCS to ADD or ALL. One aspect of the intersecting algorithm surprised users at the beta test sites; the algorithm neither deletes colinear arcs or intersects them. You will need to keep colinear arcs in mind when using the new INTERSECTARCS command.

The new 4.0 ARCEDIT capabilities may increase the time it takes to ADD an arc, especially if the following conditions occur: the added arc undershoots the arc it should intersect; both arc intersecting and splining have been set, and the grain is small. Under these conditions, a great deal of intersect checking must be done; this checking takes time. To speed things up, the user can increase the grain and/or overshoot the arc.

Users have been asking for faster display on graphic terminals. ARCPLOT 4.0 defaults to a fast display option whenever the display device is a graphic terminal. The display is faster because WEEDDRAW ON generalizes arcs before displaying them. A few beta site users called to ask why 4.0 plots looked a little different on their high resolution terminals. We explained the above and suggested they set WEEDDRAW OFF to display ungeneralized arcs.

The ARC/INFO 4.0 release includes a directory of sample AML programs which you can build upon. Look for a top level directory named SAMPLES.

## EXCERPTS FROM ELECTRONIC MAIL DATABASE

RELEASE	SYSTEM	COMMAND	DESCRIPTION	STATUS
4.0	ARC	AML	AML variables store up to 128 characters in an AML variable.	L
4.0	ARC	AML	&SELECT does not equate 001 or 01 to 1. To avoid this, set the AML variable equal to itself and multiply it by 1.	L
3.2/4.0	ARC	EXPORT IMPORT	When running EXPORT, do not assign the export file extension .Exx. Let EXPORT assign the extension.	U
4.0	ARC	INFO	ARC cannot handle Integer (I) INFO items with values greater than 2,147,483,647, which is 2 to the 31st power minus 1. If you have a value greater than 2,147,483,647 define the item as Numeric (N).	L
3.2	ARC	PROJECT	UTM projection without specifying zone may create overflow. The error message "illegal DMS field" may appear. Instead of inputting a point within the zone as a parameter, use the project "ZONE" argument.	L
3.2/4.0	ARC	RESELECT	The limit for the maximum number of features in a selected set is 160,000 in 3.2 and 320,000 in 4.0. The work around is to SPLIT the coverage into parts.	L

B--Bug no fix currently unavailable  
N--Fix available in next release

W--Workaround available by electronic mail or phone

L--Software limitation  
U--Common user error

## TRAINING NEWS

by Monica McKenna

The Education and Training people have been busy on a number of projects that are geared towards meeting the needs of our ARC/INFO users.

### Videos

One we are particularly excited about is the 4.0 video that shows an overview of the most important changes and additions in the 4.0 release. The video will have two parts. Part 1 will be geared toward administrators and managers of ARC/INFO systems, and Part 2 will be focused on the technical users of the system. We are also developing videos that accompany each of the pc products. Videos yet to come are PCARC PLOT, PCOVERLAY, PCGRIDCONVERSION and PCARCEDIT.

### ARC/INFO Training

The changes and additions from the 4.0 release will also affect our two-week ARC/INFO course. We are presently updating the existing training materials to incorporate 4.0 changes. In addition, we are reviewing other software training for ideas that we could use to improve our materials.

Once we decide on a new format and instructional approach, we plan to conduct a major revision of the ARC/INFO training course. This revision will not only improve the organization and format of the course, but it will lay the groundwork for our future course development efforts.

In the next two months we will be organizing and planning "Regional" classes on Application Programming with AML. We would like to know how many people in each area would be interested in such a class. Please indicate your interest on the enclosed reader survey form.

### Curriculum Planning

In order to meet the training needs of the growing user population, we have an integrated course development approach. This approach involves a process of building a training curriculum that is comprehensive, as well as flexible. The curriculum will be comprehensive in that it will adequately prepare the trainees to use ESRI's systems at all levels of sophistication, from the very basic to the highly technical. The curriculum will be flexible in that users will be able to select the training courses, or parts of courses, that best meet their training needs.

We will need your help building this training curriculum over the next few years. You will be hearing from us in the future as we survey training needs, but in the meantime, any comments or ideas should be sent to Monica McKenna, the training development coordinator, at the ESRI Training Center.

### Class Registration

Below is the ESRI Education and Training Schedule for 1988. On the following page is a Registration Form. If you are interested in any of the courses, please mail the completed Registration Form, to Mary Gilbert, the Training Coordinator.

### ESRI EDUCATION AND TRAINING SCHEDULE REDLANDS TRAINING CENTER

COURSES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ARC/INFO Training Course	11-22	8-19	7-18	11-22	9-20	13-24	11-22	15-26	12-23	10-21	7-18	5-16
Introduction to Database Design			28-29			6-7			26-27			
Cartographic Production				1-2			25-26				1-2	
Applications Programming			30-31			8-9			28-29			
Geographic Analysis and Modeling			28-29			27-28				3-4		
ARC/INFO Processing Techniques			30-31			29-30				5-6		
ARC/INFO System Programming		22-26			23-27					24-28		
Systems Administration				1-2							3-4	

\*\*\*ESRI USER CONFERENCE MARCH 20-24

For more information or to register for classes, contact:

Ms. MARY GILBERT  
ESRI Training Center  
380 New York St.  
Redlands, CA 92373  
(714) 793-2853

**ESRI EDUCATION AND TRAINING PROGRAM  
REGISTRATION FORM  
(ONE REGISTRATION FORM PER STUDENT)**

NAME \_\_\_\_\_ TITLE \_\_\_\_\_  
 ORGANIZATION \_\_\_\_\_  
 PHONE \_\_\_\_\_  
 MAILING ADDRESS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**PLEASE INDICATE THE COURSES YOU WISH TO ATTEND**

DATE	COURSE	LENGTH	FEE
_____	ARC/INFO TRAINING COURSE	10 DAYS	\$2,500
_____	INTRODUCTION TO DATABASE DESIGN	2 DAYS	\$ 500
_____	CARTOGRAPHIC PRODUCTION	2 DAYS	\$ 500
_____	GEOGRAPHIC ANALYSIS	2 DAYS	\$ 500
_____	APPLICATIONS PROGRAMMING (AML)	2 DAYS	\$ 500
_____	ARC/INFO SYSTEM PROGRAMMING	4 DAYS	\$1,000
_____	SYSTEMS ADMINISTRATION	1 DAY	\$ 250
_____	PROCESSING TECHNIQUES	2 DAYS	\$ 500

I would like assistance with accommodations and/or airport transportation.

Hotel/Motel Desired \_\_\_\_\_

Dates of Arrival and Departure \_\_\_\_\_

Arrival Flight/Time \_\_\_\_\_

TOTAL FEE \$ \_\_\_\_\_  
(Due at time of registration)

Method of Payment:

CHECK

Gov't  
Training  
Request

P.O. # \_\_\_\_\_

**MAIL THE COMPLETED REGISTRATION FORM WITH THE COURSE FEE TO:**

**ESRI  
380 NEW YORK ST.  
REDLANDS, CA 92373  
ATTN: TRAINING COORDINATOR**

**OR CALL ESRI AT (714) 793-2853**

**NOTE: For information regarding availability of courses contact Ms. Mary Gilbert at ESRI**

## ARC/INFO USERS CORNER

This space will be reserved for the ARC/INFO user community. Please send in content and format suggestions. Letters and articles are welcome. Is there a volunteer column editor out there?

The 'Technical Tip' column is reserved for longer articles dealing with an important aspect of ARC/INFO processing. Send your material and ideas to Dixie Hardy - ESRI, Redlands.

### TECHNICAL TIPS

#### *Speaking About Fuzzy Creep by Bernie Szukalski*

Consideration of tolerances during coverage processing may create problems and confusion for the ARC/INFO user. Unfortunately, many of these problems do not appear until late in the course of a project after much effort has been spent in preparing the data base. It is at this point that the user may experience problems with intersections being detected, loss of accuracy, and misleading results when performing overlays using coverages with varying tolerances. Even when tolerances are strictly maintained "fuzzy creep" may cause unexpected results. Fuzzy creep is feature movement due to the minimum distance separating vertices. An interesting example can easily demonstrate the effect of fuzzy creep:

1. Generate a grid of 100 cells each 1 x 1.
2. Using the same tic coordinates as above generate another grid of 4 cells, each 5 x 5.
- and 3. Build both to establish polygon topology.

At this point enter INFO and examine the resultant PAT files. Select the first grid and RESELECT for areas less than 1. As we would expect there is one record selected; the outer boundary polygon. Next perform a UNION of these two coverages and examine the results in INFO again. Select the <out.cover> and LIST the area. Now RESELECT for area less than 1. It may be surprising to find many records selected this time. Altering the item definition to include 10 decimals will show why this is true. Using a very small fuzzy tolerance for the UNION (try .000001) will demonstrate how "sliver polygons" can be inadvertently created.

Problems involving "fuzzy creep" can be minimized if the following is observed:

- Establish appropriate tolerance values in the design phase and record these values in the coverage TOL files.
- Maintain these throughout the entire automation/processing phase.
- Minimize the repetition of processes using CLEAN which incur "fuzzy creep" (e.g., overlays).
- Anticipate "fuzzy creep" and be prepared for potential anomalies in evaluating the results.

## USER SUPPORT CORNER

- Q. How do I contact an ESRI programmer to answer programming questions?  
A. Call the user support hot line on Fridays. A programmer will be on duty.
- Q. How can I make sure other sites can read my EXPORT files?  
A. Use the ARC utilities TAPERED and TAPEWRITE instead of the operating system utilities to load and unload the EXPORT files to/from tape.
- Q. Explain the "Cannot define the output PAT" error from ARC commands that create new coverages.  
A. A PAT for the output coverage may already be defined in the INFO directory. Perhaps someone deleted the coverage with an operating system delete rather than ARC KILL. Maybe someone prematurely exited an ARC command leaving the defined PAT in the INFO directory.
- Q. Please explain the "Error Merging files (CLPATT)" message from 3.2 LIBRARIAN EXTRACT.  
A. This usually means the map section coverage has been damaged. Check the integrity of the coverage by doing a DESCRIBE and attempting to plot a portion of it.
- Q. How do I handle a "Insufficient number of segments" message in 4.0 ROUTE on a PRIME computer?  
A. See if a RELEASE -ALL command will solve the problem. If not, check the Release Notes which discuss setting the maximum number of private dynamic segments.
- Q. Exactly how does KILL go about getting rid of a coverage?  
A. First it deletes the files in the INFO directory, and then it deletes the coverage subdirectory.
- Q. I digitized from a State Plane manuscript directly into a UTM projection. When I TRANSFORMED my coverage into State Plane coordinates it was warped. What happened?  
A. If the manuscript is in the State Plane projection, you should either digitize directly into State Plane units or in digitizer units followed by a TRANSFORMATION from the digitizer board reference units to the State Plane units. Then you can use ARC PROJECT to change between the State Plane and UTM projections.
- Q. I GENERATE quadrangle neatlines in decimal degrees and then PROJECT them into the State Plane projection. They don't match the State Plane manuscript. How can I get them to match?  
A. The problem could be an incorrect scale factor, or the fact that only two points were used to calculate the neatline from corner to corner. (Two points usually do not define a straight line projected from a sphere.)

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## CALENDAR

### European Regional User's Group Conference

Sept. 28-30, 1987 \*\*\* Munich, West Germany  
Contact Joerg Schaller at ESRI Munich 08166/3372

### Northeast Regional User's Group Conference

Oct. 1-2, 1987 \*\*\* Burlington VT  
Contact Gary Smith at University of Vermont (802) 656-3092

### Great Lakes - Midwest Regional User's Group Conference

Oct. 14-16, 1987 \*\*\* Champaign IL  
Contact Dawn McWha II Dept of Energy and Natural Resources (217) 333-8907

### GIS '87

Oct. 26-30, 1987 \*\*\* San Francisco, CA  
Contact Kass Green (415) 638-6122

### CA/HI/NV Regional User's Group Conference

Oct. 26, 1987 \*\*\* Meeting to be held at GIS '87 in San Francisco  
Contact Chuck Johnson at US BOR Sacramento (916) 978-5063

### NCGA MAPPING AND GIS'87

Nov. 9-12, 1987 \*\*\* SAN DIEGO, CA  
Contact Registration Hotline 1-800-225-NCGA

### Northwest Regional User's Group Conference

Oct. 20-21, 1987 \*\*\* Portland OR  
Contact Douglas Nebert at USGS WRD Portland OR (503) 231-2075  
or Dean Anderson at ESRI Northwest (206) 754-4727

### Southwest Regional User's Group Conference

Nov. ?-? 1987 \*\*\* Denver, CO  
Contact Frank Jones at RTD Denver (303) 571-6110

### Alaska Regional User's Group Conference

Nov. 13, 1987 \*\*\* Anchorage, AK  
Contact - Earl Nordstrand at North Slope Borough (907) 279-9505

### IGIS-87

Nov. 15-18, 1987 \*\*\* Arlington, VA  
Contact E.H. at Pechan & Associates (703) 941-4490

### Canadian Regional User's Group Conference

Nov. 18-20 \*\*\* Toronto, Canada  
Contact Jennifer Overbury

### Southeast Regional User's Group Conference

Dec. 7-7, 1987 \*\*\* Atlanta GA  
Contact Henry Strickland at US EPA Atlanta GA (404) 347-3402  
or Chuck Killpack at ESRI Southeast (704) 541-9810

### Alaska Surveying & Mapping

Feb. 4-8, 1988 \*\*\* Anchorage, AK

### ESRI User's Conference

March 20-24, 1988 \*\*\* Palm Springs, CA  
Contact: Mary Gilbert at ESRI in Redlands (714) 793-2853

*Please verify dates with contact person as dates may change after ARC/TECH publication.*

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# ARC/TECH Reader Survey - Fall '87

Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

Organization: \_\_\_\_\_ Electronic Mailbox: \_\_\_\_\_

ARC/TECH was ( \_\_\_ useful, \_\_\_ worth reading, \_\_\_ a time waster)

ARC/TECH ( \_\_\_ should, \_\_\_ should not) be published.

I will contribute material for

- Technical Tips
- ARC/INFO Users Corner
- Regional Group Highlights
- Other \_\_\_\_\_

\_\_\_\_\_

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Suggestions: \_\_\_\_\_

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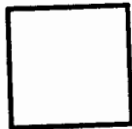
\_\_\_\_\_

After completing the survey fold at the dotted line and staple.

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**ESRI**  
  **380 New York St.**  
  **Redlands, California 92373**  
  **Attn. Dixie Hardy**

Mailing Label



**ESRI**  
**380 New York St.**  
**Redlands, California 92373**  
**Attn. Dixie Hardy**