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Title:

GPLAYOUT: a picture-editor

Author: Malcolm Brown, Arthur Wilson

Contact: Advisory service

Software Support Category: See Note 15

Synopsis

The GPLAYOUT program enables you to take one or more pictures from existing plotter files, edit them to suit your requirements and create one or more new pictures in a new output file. The original pictures used as input will remain unchanged.

Keywords

DRAWPICTURE, editing pictures, FRAMES, GPLAYOUT, pictures, plotter files.

Edinburgh Regional Computing Centre

James Clerk Maxwell Building, The King's Buildings, Mayfield Road, Edinburgh, EH9 3JZ. Telephone 031-667 1081

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INTRODUCTION

What can you do with the GPLAYOUT program?

You can use GPLAYOUT to take one or more pictures from existing plotter files, edit them to your requirements and copy the edited picture to a new output plotter file. During this process, the original input pictures remain unchanged.

For example, you can use GPLAYOUT to:

- construct a complex diagram by plotting related pictures on top of one another. This is called overlaying.
- reduce or increase the size of a picture to any size for publication.

GPLAYOUT was written by A. Borthwick (then of Meteorology Department, University of Edinburgh), but has been enhanced and is now maintained by Malcolm Brown of the ERCC.

Input and output of pictures

Any picture to be used by GPLAYOUT must be held in an RCO plotter file which has been created by an EMAS graphics program or package. Within the file the picture is stored in a FRAME and it is this FRAME which GPLAYOUT uses to input and output a picture. An RCO plotter file can contain more than one FRAME and consequently more than one picture. For more information on RCO plotter files and frame creation, see chapter 5 of the ERCC Graphics Manual.

Further Information

You can get more information on GPLAYOUT by:

- typing **HELP GPLAYOUT** after the EMAS *Command:* prompt,
- typing **GPLAYOUT** and answering **YES** to the *View help information?* prompt,
- answering with **H** to the GPLAYOUT *Edit command(H for help)* prompt; this gives you a brief description of the GPLAYOUT edit commands,
- answering with **V** to the *Edit command(H for Help)* prompt; this gives you a full description of the GPLAYOUT program.

For background information see:

- the ERCC Graphics Manual,
- User Note 12 - "EASYGRAPH on EMAS 2900",
- User Note 17 - "Plotters on RCONET",
- User Note 75 - "DRAWPICTURE"

all of which are available from the ERCC Advisory service.

HOW TO RUN THE GPLAYOUT PROGRAM

Access to Software

Before you can use GPLAYOUT you must have access to it and the routines it uses. You do this by issuing these two commands once only:

Command: **OPTION SEARCHDIR=CONLIB.GRAPHICS** {EMAS 2900}
Command: **OPTION SEARCHDIR=ERCLIB.GRAPHICS**
Command: **SEARCHDIR ERCLIB:GRAPHICS** {EMAS-3}

How to start the program

Type GPLAYOUT after the EMAS *Command:* prompt.

Command: **GPLAYOUT**

You are first given the opportunity to VIEW the on-line HELP information, which you can by-pass by typing NO:

View help information? **NO**

Summary of GPLAYOUT's operation

The GPLAYOUT program has eight stages, which are:

1. Nominate an output file or device to receive the new picture.

2. Set up a FRAME in this output file (if you specified a device name, the FRAME will be set up in a temporary file and sent to the device when you leave the program).

3. Select an input file,
   a. if this file contains only one FRAME then this is automatically taken as the input FRAME.
   b. if this file contains more than one FRAME you must select just one of them.

4. Confirm current pen colour or select a new pen colour.

5. Edit the picture held in the input FRAME using the GPLAYOUT edit commands. These are not performed immediately, they are stored until you perform stage 6 below. This allows you to reissue them as often as necessary to get the editing right.

6. Transfer the edited input FRAME into the output file.

7. Go back to stage 3 or leave the program.

8. Display the new plotter file picture on a plotter or on a graphics terminal.

The summary of operation is now expanded into a full explanation in sections 1 to 8 below.

1. How to nominate an output file or device

On first entering the program, you are prompted for the name of the new plotter file which is to be created. If the file name you reply with already exists you are asked if you want to overwrite it: you can then reply NO to specify a different output file, YES to overwrite the file or ABORT to stop the GPLAYOUT program. If you select YES to overwrite and then abort the program at a later stage, the file will be destroyed.

The output filename can also be a device name, for example .GP15, in which case the output will go straight to this plotter when you leave the program.

Up to this point, the output on your interactive terminal could look like this:

Command: **GPLAYOUT**
GPLAYOUT Version 3.2 - released 17/8/84 at 18.35.00
****see VIEW information for new Inputfile facility****
View help information? **NO**
Outputfile or device **PLOTOUT**

To save time, you could issue the following command:

Command: **GPLAYOUT outputfile,plottertype**

which bypasses the offer of help information and the prompt for an "outputfile" name or device. However, you should note the following two points if you use this method:

- if you give the name of an "outputfile" which already exists, you will be asked if you want to overwrite it. If you answer **N** or **NO**, you will be prompted for another file,
- if you give the name of a device instead of a file, you can omit the "plottertype" parameter (which defines the characteristics of the plotter to which "outputfile" refers: the default is 1, see User Note 17).

2. How to establish a FRAME in the output file

GPLAYOUT asks you three questions:

1. How much paper will you require to accommodate all of the output pictures you wish to create in this file? For maximum information, see routine GRAPHPAPER in the ERCC Graphics Manual chapter 5.

2. What will be the size and position of the first output picture? This will be the distance of the lower-left (Xmin,Ymin) and top-right (Xmax,Ymax) corners from the plotter origin (in centimetres - see routine SETPLOT in the ERCC Graphics Manual chapter 5).

3. Do you want a border drawn around this FRAME? Reply Y or N.

If you follow the three steps above correctly, the output on your interactive terminal could look like this:

Claim sufficient paper to include the job id. frame (10.08 cms) and your frames.
Total paper needed(cms) **40**
New output frame co-ordinates (cms) relative to lower-left corner of paper.
limits are 0.00(Xmin), 0.00(Ymin), 29.92(Xmax), 82.50(Ymax).
Frame Xmin(cms) **0**
Frame Ymin(cms) **0**
Frame Xmax(cms) **23**
Frame Ymax(cms) **20**
Outline frame(Y/N) **Y**

NB! For speed, all these parameters may be presented on one line, separated by spaces or commas, for example:

Command: **GPLAYOUT newfile,.GP15**
Claim sufficient paper to include the job id. frame (10.08 cms) and your frame.
Total paper needed(cms) **40 0 0 23 20 Y**

Unless you reply ABORT to any of them, which will terminate the GPLAYOUT program, the values will be repeatedly prompted for until they specify an acceptable output FRAME.

3. How to select the input file

You are asked for the name of an input file. To this you can answer with one of the following:

- the name of an RCO plotter file, e.g. T#PLOTFL

  If this file has more than one FRAME, you will be asked to select one of them as the input FRAME. For example:

  Inputfile(. to quit) **T#PLOTFL**
  T£PLOTFL contains 2 frames.
  Frame no. **1**

  If there is only one FRAME i.e. one picture in the file, then this is taken automatically.

  If you reply ABORT to the question about which FRAME you require, you will again be asked for an input file.

- two single quote characters to re-input the previous plotter file. This reply can only be used if you have already read in an input file during the current run of the GPLAYOUT program, if you have not, the message:

  Input file not yet specified!

  will be printed on your terminal.

- the name of an EMAS file which contains a set of extra plotting instructions, (for more details, see **HOW TO ADD PLOTTING FROM THE GPLAYOUT PROGRAM** on page 17 of this Note). This filename must be preceded by the @ character, for example @PLOTINST.

- .IN, which allows you to enter the extra plotting instructions from your terminal (for more details see **HOW TO ADD PLOTTING FROM THE GPLAYOUT PROGRAM** on page 17 of this User Note).

4. How to select the pen colour

GPLAYOUT next tells you the current pen colour and asks if you want to change it. For example:

Proposed pen colour is Black
Pen O.K.(Y/N)

If you reply with **Y** you go on to the next stage; if you reply with **N**, you are asked to make a selection from a menu of pen colours; if you reply with ABORT at this stage, you will be asked for a new input file.

Note that this step only affects the FIRST colour: subsequently, the colour instructions are taken from the input file unless you use the GPLAYOUT edit command "C" which is described in the editing commands on page 13.

5. How to edit the picture held in the input FRAME

Now that you have selected an input FRAME, you can use the GPLAYOUT edit commands to alter the picture it contains. The commands and their parameters are described in the section headed **THE GPLAYOUT EDIT COMMANDS** on page 12. The program continually prompts you for an edit command until you reply with "E" (for execute) or "Q" (for quit). You can repeat commands as often as necessary to get the editing you require: the last use of a command overrides all earlier uses of the same command. You can use the "I" (for information) command to get a description of the picture held in the input and output frames.

6. How to transfer the edited file into the output file

Once you have finished editing the input FRAME, you can type either:

- Q to abandon the input FRAME and have the chance of selecting another, or
- E to execute the edit commands and transform the input FRAME into the output FRAME.

7. How to leave the GPLAYOUT program or select a new input file

When you have left the editing phase by typing "Q" or "E", you are once again presented with the prompt: *Inputfile(.to quit).* If you are satisfied with the contents of the output FRAME, you can close the output file and terminate the program by replying with a full stop. You also have the option of returning to step 3 above and selecting a new input file in order to edit one of its pictures and add it to the output file.

8. How to get a picture of the newly created output file

If you specified the name of a plotting device as output file, the completed drawing will be sent automatically to that device after you terminate the program.

Otherwise to list the new picture on a graph plotter, use the EMAS DRAWPICTURE command, for example:

Command: **DRAWPICTURE PLOTOUT,.GP15**

Alternatively you may wish to use DRAWPICTURE in its interactive mode and choose later which graphics device you wish to view the picture on, e.g.

Command: **DRAWPICTURE PLOTOUT**
:
Drawpic: **DEVICE .X5A**
Drawpic: **DRAW**

See User Note 75 for full details on DRAWPICTURE.

Useful Hints

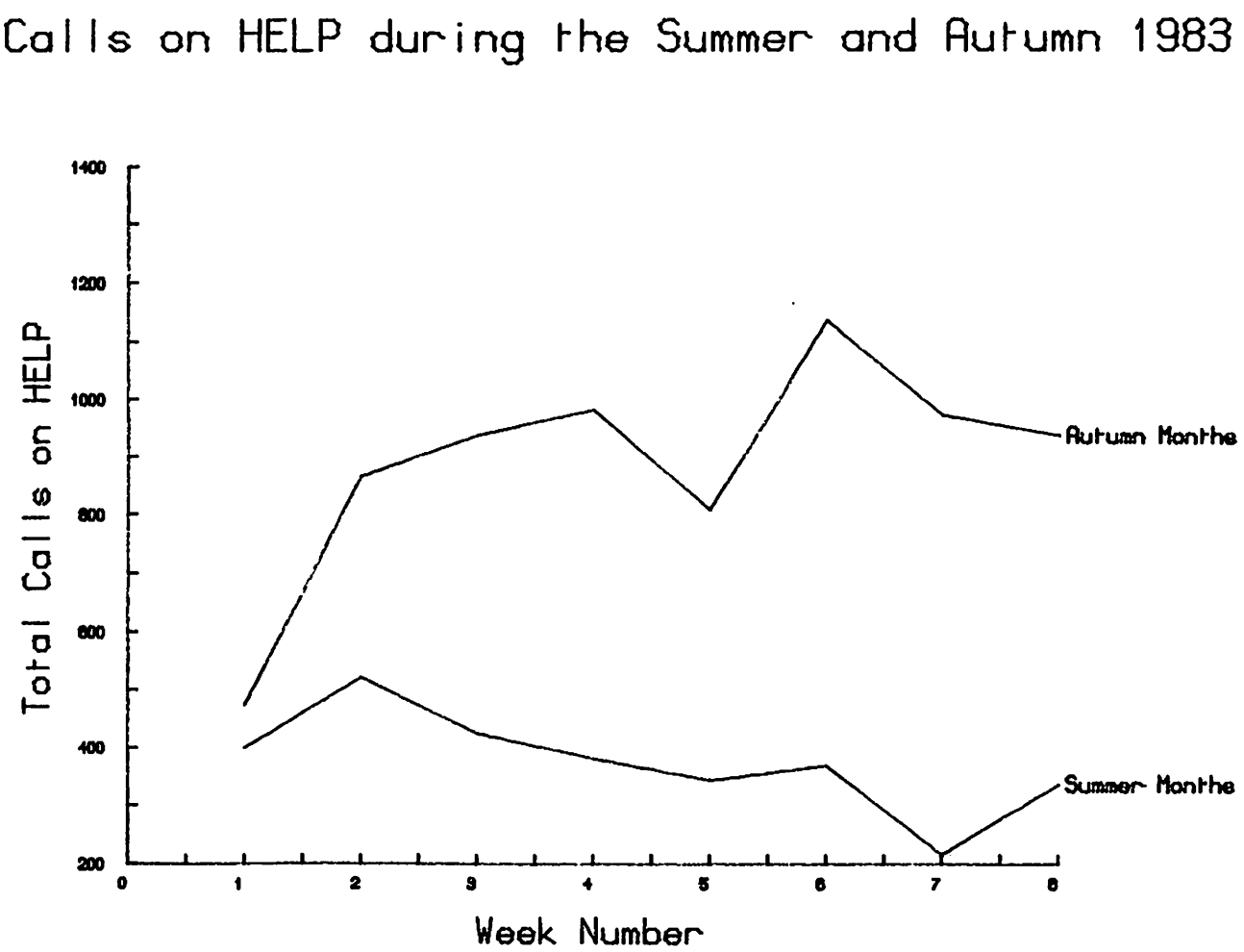
The difficulty in working with pictures from an ordinary terminal is that you cannot see progress and results. It is therefore helpful if you have graph plots of your input plotter files available while you are using the program. You can mark these copies with areas you wish to extract, using a ruler to measure any co-ordinates or displacements that you may need to give as answers to program prompts. You should treat each input file completely independently when running it through GPLAYOUT: for example, if you want to move the current input picture before plotting it, the parameters you give are with respect to the OUTPUT FRAME, and not to any previous input FRAME you may have been working on. GPLAYOUT only knows about the current input FRAME and the output FRAME.

Five key points to remember are:

1. Use "I" regularly - to find out how the current input would appear in the output if you used "E" at this point (see page 21 for an example).
2. To leave the main loop, reply with a full stop to GPLAYOUT's prompt *Inputfile(. to quit)*.
3. The (possibly edited) input FRAME is only copied into the output file when command "E" - for EXECUTE - is used.
4. All lengths are in centimetres, and angles in degrees (positive anticlockwise, 0 horizontal).
5. All edit parameters are reset automatically to their default values for each new input FRAME. These settings would cause the input diagram to appear unaltered in the output. The actual settings are given in the description of the GPLAYOUT edit command "D", which is described on page 13.

To give you a flavour of GPLAYOUT, the following example takes the picture held in plotter file T#PLOTFL (see figure 1 opposite), puts it through the GPLAYOUT program and copies it to plotter file PLOTOUT (see figure 2).

Figure 1


Calls on HELP during the Summer and Autumn 1983
Total Calls on HELP
1400
1200
1000
800
600
400
200
0
1
2
3
4
5
6
7
8
Week Number
Autumn Months
Summer Months

The picture in figure 1 is held in a file called "T#PLOTFL". If you put it through the GPLAYOUT program, the output on your terminal could look like this:

Command: **GPLAYOUT**
GPLAYOUT Version 3.2 - released 17/8/84 at 18.35.00
****see VIEW information for new Inputfile facility****
View help information? **N**
Outputfile or device **PLOTOUT**
Claim sufficient paper to include the job id. frame (10.08 cms0 and your frames.
Paper needed(cms) **40**
New output frame co-ordinates (cms) relative to lower-left corner of paper.
limits are 0.00(Xmin), 0.00(Ymin), 29.92(Xmax), 82.50(Ymax)
Frame Xmin(cms) **0**
Frame Ymin(cms) **0**
Frame Xmax(cms) **23**
Frame Ymax(cms) **20**
Outline frame(Y/N) **Y**
Inputfile(. to quit) **T#PLOTFL**
T£PLOTFL contains 1 frame.
Frame number = 1, length = 22.90cms, height = 16.59cms.
Proposed pen colour is Black.
Pen O.K.(Y/N) **Y**
Edit command(H for help) **E**

****(CHANNEL 80) File PLOTOUT initialised.****

Inputfile(. to quit) .

****(CHANNEL 80) End of plotter file PLOTOUT after 58 records.****

Routine GPLAYOUT finished.

Command: **GPLIST PLOTOUT,.GP15**

The output generated on GP15 can be seen in Figure 2 opposite.

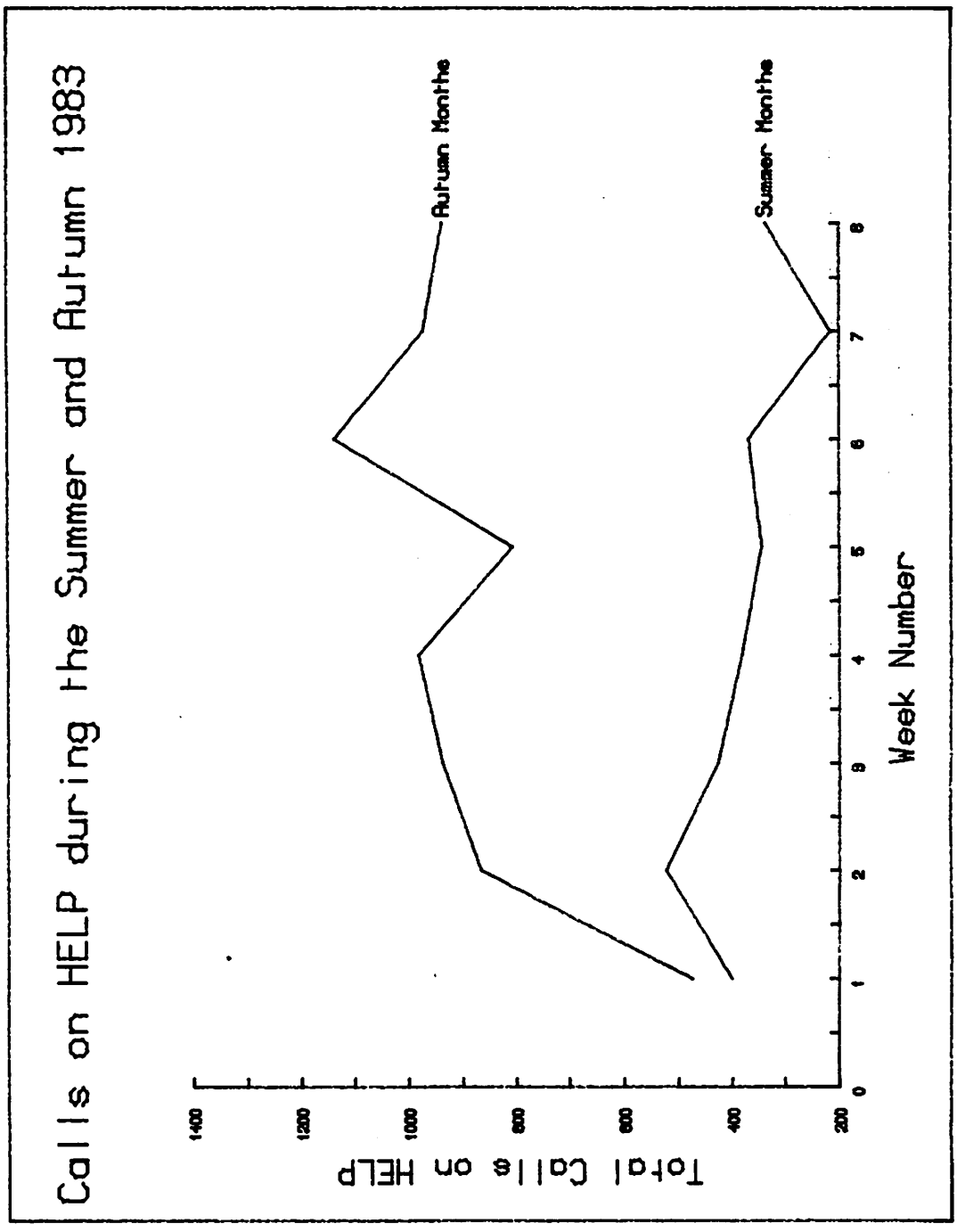

Calls on HELP during the Summer and Autumn 1983
Autumn Months
Summer Months
Total Calls on HELP
Week Number
1400
1200
1000
800
600
400
200
0
1
2
3
4
5
6
7
8

Figure 2

THE GPLAYOUT EDIT COMMANDS

The GPLAYOUT edit commands each consist of a single keyword, and it is possible to specify them just by their initial letter. The only exception to this rule is the ABORT command, which must be typed in full.

The command letter can be followed by a newline, space, or equals sign, followed by parameters if it takes them.

If you use a newline as the separator the necessary parameters will be prompted for individually. When you know what parameters to give, you can speed things up by typing the command, then a space or an equals sign (whichever you prefer), then the list of parameters separated by spaces or commas all on the same line.

If GPLAYOUT cannot make sense of an answer, it will always ask for it again.
If you answer with ABORT, GPLAYOUT will leave the current sequence and ask for a new inputfile.

Commands which alter the picture:
- B: to draw a Border around a picture,
- C: Colour selection,
- O: to Offset, or relocate a picture,
- R: to Rotate a picture,
- S: to re-Scale a picture,
- W: to Window, i.e. extract a section from a picture.

Housekeeping commands:
- A: to monitor out-of-Area plotting,
- D: to restore all edit command parameters to Default settings,
- N: to define a New setplot or FRAME in the output picture.

Help commands:
- H: Help - for a brief summary of the commands,
- I: Information about the current state of the picture,
- V: to View the detailed help information.

Terminating commands:
- ABORT: to abandon the current input FRAME,
- E: to Execute the instructions - i.e. move the edited input FRAME to the output FRAME,
- Q: to Quit; abandon this input FRAME and proceed to the next.

All the edit commands now follow in alphabetical order.

A:AREAFLAGGING

A part or all of the picture in an input FRAME may exceed the limits you specified for your output FRAME. If this is so, then the offending parts will be omitted from the output file (the term for this action is scissoring).

If you want to know when you draw outside the limits, you must set the AREAFLAG to ON like this:

Edit command(H for help) **A=ON**

The program will then tell you the first time you go outside the output file area, then every fiftieth time thereafter. After twenty messages, the program will be terminated. By default the AREAFLAGGING value is set to OFF. (See routine AREAFLAG in chapter 5 of the ERCC Graphics Manual.)

B:BORDERLINE

Use this command to draw a border around any FRAME you extract from an RCO plotter file and transfer to the output FRAME. By default BORDERFLAG is set to NO, but you can change it like this:

Edit command(H for help) **B=YES**

C:CHANGEPEN

By default the CHANGEPEN flag is set to NO. If you change it to YES like this:

Edit command(H for help) **C=YES**

you can choose a new pen colour wherever a pen change occurs in the input FRAME. You will be prompted for new colours after you give the EXECUTE command (see E: EXECUTE below). You will be told the present colour and asked if you want to select an alternative. If you intend to list your new plotter file on one of the Calcomp plotters, your choice is limited to pens 0 to 3, but if you are going to use a Hewlett Packard plotter, you have a choice of pens 0 to 7. The pen numbered -1 is the invisible ink pen: select this one if you want to omit a part of your picture.
Please note that you can only change pens at points where a pen change occurs in the input FRAME.

D:DEFAULTS

Use this command to reset all parameters to the following defaults (which are set automatically each time you select a new input FRAME):

Output is to current output FRAME	(see command N)
XOFFSET=0 and YOFFSET=0	(see command O)
XFACTOR=1 and YFACTOR=1	(see command S)
ROTATION=0	(see command R)
CHANGEPEN=NO	(see command C)
AREAFLAG=OFF	(see command A)
BORDERFLAG=NO	(see command B)
No window is set on the input FRAME, i.e. the whole input FRAME is used	(see command W)

E:EXECUTE

Once you have edited an input FRAME to your satisfaction, you can transfer it into the output FRAME by using the EXECUTE command like this:

Edit command(H for help) **E**

This command also takes you out of the editing stage and asks you for a new input file. You can then give a valid file name or leave the program by typing a full stop.

H: HELP

This command gives you a brief summary of all the GPLAYOUT edit commands (if you want a full description of the program, type V for View).

I: INFORMATION

This command prints a description of the input and output FRAMES to let you know the effect of your editing instructions so far. You can use it as often as you like to check progress. (See page 21 for an example.)

N:NEWSETPLOT

This command creates a new FRAME in the output file. Subsequently, all executed input FRAMES will be transferred to this new output FRAME.

When you use NEWSETPLOT, you are asked for the

Output frame type(0,2,4)

to which you must reply with 0, 2 or 4, which mean:

0 - create a new FRAME with its origin 5 cm beyond any FRAME that already resides in the output file.
2 - create a new FRAME with its origin immediately after any FRAME that already exists in the output file.
4 - create a new FRAME with its origin at the same place as the previous one so overlaying it on top of the last created FRAME.

You are then prompted for the new output FRAME co-ordinates relative to this origin. If you give replies within the limits of the remaining paper, you are asked if you want a border drawn round the new FRAME.

You can give all the replies on the one line like this:

Edit command(H for help) **N=2,5,5,15,15,NO**

NOTE that the "N" command defines a new FRAME in the output file, not in the input file.

O:OFFSET

Use this command to move the input FRAME to a new position relative to the bottom left hand corner of the output FRAME. It takes two parameters, the X and Y co-ordinates for the point in the current output FRAME where you want the new FRAME to be placed. For example, if the X and Y co-ordinates are 5 and 10, the bottom left hand corner of the input FRAME will be placed 5 cm right and 10 cm up from the lower-left corner of the output FRAME.

The effect is thus:

positive x: input moved to the right.
negative x: input moved to the left.
positive y: input moved upwards.
negative y: input moved downwards.

You can either include the parameters with the command like this:

Edit command(H for help) **O=5,10**

or they will be prompted for like this:

Edit command(H for help)	**O**
Xoffset(cms)	**5**
Yoffset(cms)	**10**

Please note that:

- the X and Y co-ordinates do not have to lie within the output FRAME,
- if you have extracted a window from the input FRAME (using the "W" command), and you transfer it to the output FRAME (using the "E" command), by default its bottom left hand corner will be placed at the bottom left hand corner of the output FRAME. You will have to use the Offset command to re-situate the window in the output FRAME.

Q:QUIT

This command ignores the current input FRAME and asks you for another input file. The output FRAME is left unaltered (i.e. any previously EXECUTED FRAMES are still in it). Note that you can abandon the effect of your editing but retain the current input FRAME by using command "D" instead of "Q". The "D" command resets all parameters to their default values.

R:ROTATE

If you wish to turn a picture in an input FRAME around so that it is upside down in the output FRAME, use the ROTATE command. It takes one parameter which is a number of anti-clockwise degrees from 0 to 360. For example, if you wish to turn an input FRAME onto its left-hand edge in the output FRAME, rotate it 90 degrees anti-clockwise. You can give the command on one line like this:

Edit command(H for help)	**R=90**

or, using the prompting mechanism, like this:

Edit command(H for help)	**R**
Degrees	**90**

Please note that rotation can result in part or all of your input FRAME being outwith the limits you specified for your output FRAME. In this case you would have to use the OFFSET command to move it within the limits of the output FRAME (the I command can be useful here!).

S:SCALING

Use this command to increase or decrease the length and height of a picture held in an input FRAME. The command uses a factor to scale the sizes, e.g. the value 1 leaves the length or height unchanged, 2 doubles it and 0.5 halves it. The command takes two parameters which are the X and Y factors.

As with the other Edit commands, you can issue the command on one line, e.g.

Edit command(H for help)	**S=2,3.5**

or using the prompt method, e.g.

Edit command(H for help)	**S**
Xfactor	**2**
Xfactor	**3.5**

V:VIEW

Use this command to get a full on-line description of the GPLAYOUT program; it is recommended that you know how to use the EMAS VIEW program before you type this command.
To find out more about VIEW,

- type **HELP VIEW** at *Command:* level and you will get an on-line description,
- obtain a copy of User Note 9 ("View on EMAS-3") from the ERCC Advisory service.

W:WINDOW

Use this command to extract an area of an input FRAME, and either make it the new input FRAME or exclude it from the new FRAME. This area is called a window.

You must supply five parameters with the WINDOW command, the first four of which are the bottom-left and top-right hand co-ordinates of the area you wish to specify as the window and the last one is whether you want to keep that window or exclude it. You can either include the parameters with the command, e.g.

Edit command(H for help) **W=5,5,10,10,YES**

or have them prompted for like this:

Edit command(H for help)	**W**
Window Xmin(cms)	**5**
Window Ymin(cms)	**5**
Window Xmax(cms)	**10**
Window Ymax(cms)	**10**
Include window(Y/N)	**YES**

Any part of the window that goes outside the area specified for the output FRAME will be scissored.

You should also note that if you extract a window and send it to the output file, its bottom left-hand corner (its origin) is placed at the bottom left-hand corner of the output FRAME. Consequently you will have to use the OFFSET command to move it to the position in the output FRAME that you require.

Please note that the WINDOW command defines an area for use in the input FRAME, while the NEWSETPLOT command sets up a new area for use in the output file.

HOW TO ADD PLOTTING FROM THE GPLAYOUT PROGRAM

You can add drawing to a picture by issuing plotting instructions through GPLAYOUT either from a file or from the terminal. You would issue them from a file by typing the file name - preceded by the @ character - after the *Inputfile(. to quit)* prompt. For example:

```
Inputfile(. to quit)            @PLOTINST
Proposed pen colour is black.
Pen O.K.  (Y/N)                 Y
Edit command(H for help)        E
Inputfile(. to quit)            .
```

The file PLOTINST might, for example, contain the following instructions:

```
ANNOTATE
6
6
0.5
0
PLOTSTRING
"This is extra drawing."
.END
```

Alternatively you can issue these instructions from the terminal by typing .IN after the *Inputfile(. to quit)* prompt. The instructions are prompted for after you are satisfied with any editing commands you initiated, e.g.

```
Inputfile(. to quit)            .IN
Proposed pen colour is Black.
Pen O.K.(Y/N)                   Y
Edit command(H for help)        E

***(CHANNEL 80) File PLOTOUT initialised.***

Plotter instruction:            ANNOTATE
X-position:                     6
Y-position:                     6
Symbol size:                    0.5
Orientation:                    0
Plotter instruction:            PLOTSTRING
"String":                       "This is extra drawing."
Plotter instruction:            .END
Inputfile(. to quit)            .
```

The instructions used in the above examples - plus PLOT, POINTSYMBOL, PLOTSYMBOL, PLOTNUMBER and CHANGEPEN which can be used in this context - are described in the ERCC Graphics Manual. Additionally SELECTFONT, described in the December 1985 Newsletter, is also available in this context.

The plotter file produced by the above example would look like this:

EXAMPLE

This example shows how you could take a map of Scotland held in a plotter file called SCOTMAP (see figure 3 below), put it through the GPLAYOUT program, move the Orkneys to the bottom left hand corner and enclose them in a labelled black box. Here is a plot of the input file:

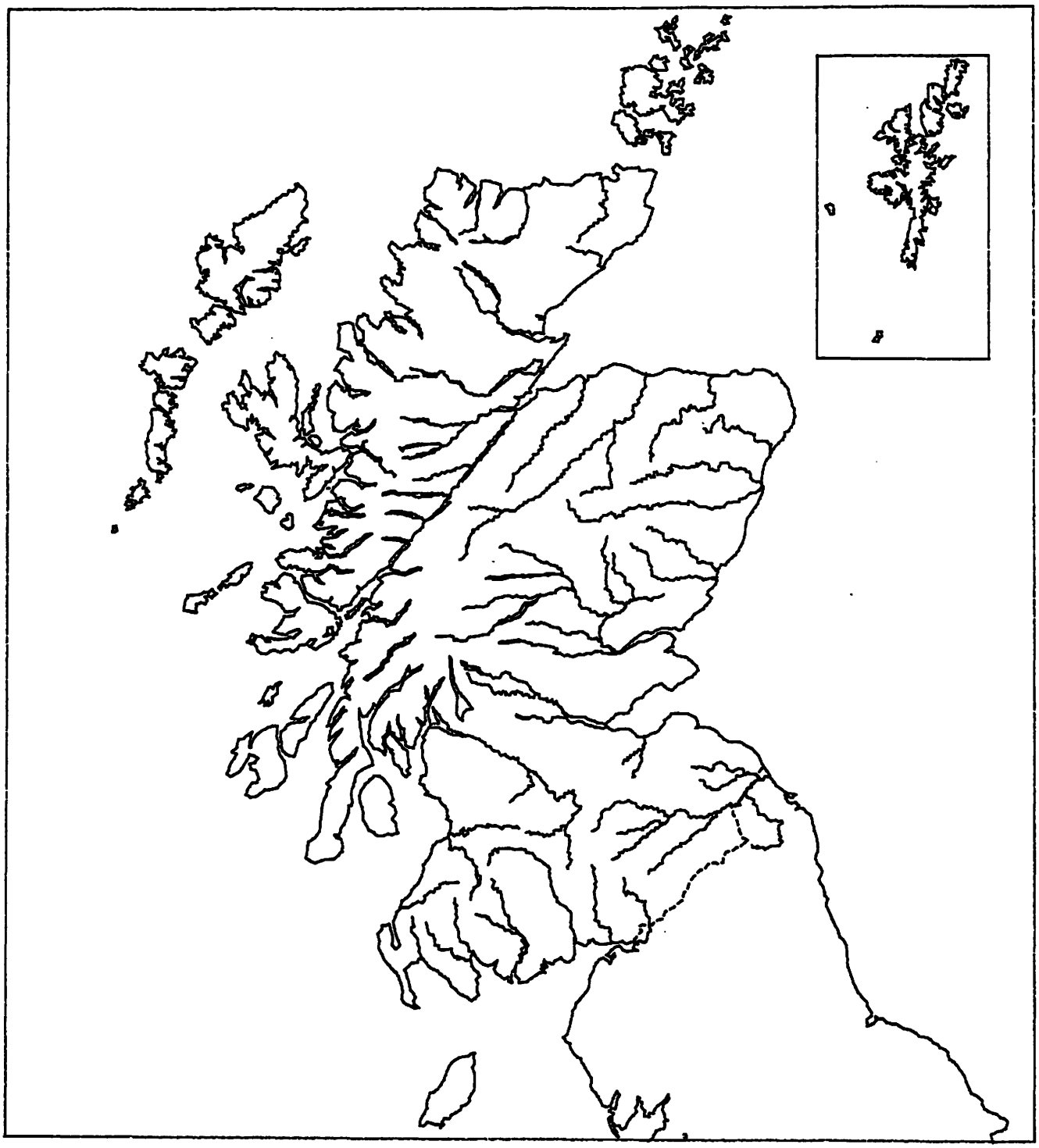


Figure 3

The first step you would follow would be to set up an output FRAME in an output file. Here is a copy of the conversation you would have with the program to do this.

Command: **GPLAYOUT**
GPLAYOUT Version 3.2 - released 17/8/84 at 18.35.00
****see VIEW information for new Inputfile facility****
View help information? **N**
Outputfile or device **MAPOUT**
Claim sufficient paper to include the job id. frame (10.08 cms) and your frames.
Total paper needed(cms) **40**
New output frame co-ordinates (cms) relative to lower-left corner of paper,
limits are 0.00(Xmin), 0.00(Ymin), 29.92(Xmax), 82.50(Ymax).
Frame Xmin(cms) **0**
Frame Ymin(cms) **0**
Frame Xmax(cms) **29**
Frame Ymax(cms) **30**
Outline frame(Y/N) **N**

Now read in the RCO plotter file called SCOTMAP which contained the map.

Inputfile(. to quit) **SCOTMAP**
SCOTMAP contains 1 frame.
Frame number = 1, length = 28.89cms, height = 25.93cms.
Proposed pen colour is Black.
Pen O.K.(Y/N) **Y**

The next step is to extract the Orkneys from the input FRAME using the WINDOW command.

Edit command(H for help) **W**
Window Xmin(cms) **14.4**
Window Ymin(cms) **22.6**
Window Xmax(cms) **17.6**
Window Ymax(cms) **25.8**
Include window(Y/N) **Y**

The command BORDER is used to put a black box round the extracted WINDOW.

Edit command(H for help) **B=YES**

Now use the OFFSET command to define where the extracted WINDOW will be placed in the output FRAME.

Edit command(H for help) **O**
Xoffset(cms) **3**
Yoffset(cms) **3**

And now put the Orkneys into output picture.

Edit command(H for help) **E**

****(CHANNEL 79) File MAPOUT initialised.****

Now label the box containing the Orkney Islands by giving direct plotting instructions from the terminal, using the routines ANNOTATE and PLOTSTRING which are both described in chapter 5 of the ERCC Graphics Manual.

Inputfile(. to quit) **.IN**
Proposed pen colour is Blue.
Pen O.K.(Y/N) **N**
Colour choice is:-
-1-Ignore, 0-Black, 1-Red, 2-Blue, 3-Green, 4-Pen 5, 5-Pen 6, 6-Pen 7, 7-Pen 8
Colour code **0**
Edit command(H for help) **E**
Plotter instruction: **ANNOTATE**
X-position: **3.5**
Y-position: **6.5**
Symbol size: **0.175**
Orientation: **0**
Plotter instruction: **PLOTSTRING**
"String": **"Orkney Islands"**
Plotter instruction: **.END**

The Orkneys are now in the output picture and you are ready to draw in the rest of Scotland. Do this by using the WINDOW command again, but this time you would extract everything except the Orkney Islands from the original input file SCOTMAP. The procedure is the same as extracting the Orkneys except you would reply **N** to the *Include window(Y/N)* prompt.

Inputfile(. to quit) **SCOTMAP**
SCOTMAP contains 1 frame.
Frame number = 1, length = 28.89cms, height = 25.93cms.
Proposed pen colour is Blue.
Pen O.K.(Y/N) **Y**
Edit command(H for help) **W**
Window Xmin(cms) **14.4**
Window Ymin(cms) **22.6**
Window Xmax(cms) **17.6**
Window Ymax(cms) **25.8**
Include window(Y/N) **N**

At this point you could request INFORMATION to get a description of the input and output FRAMES, e.g.

Edit command(H for help) I

*************************** *CURRENT INFORMATION* ***************************

Limits of proposed output drawing area are (0.00, 0.00), (29.00, 30.00)
(leaving 0.92cms. of paper for any further drawing).
The area will not be outlined; out-of-area messages will be suppressed.
You have elected to use Blue initially, then to retain any pen changes in the input frame.

The current input frame length = 28.89cms., height = 25.92cms.
from which all but the window bounded by (14.40, 22.60), (17.60, 25.80)
will be transformed into the output drawing area at
Xoffset = 0.00, Yoffset = 0.00, without rotation, without scaling.
The corners of this input area therefore transform to the points
(0.00, 0.00),(28.89, 0.00),(28.89, 25.93),(0.00, 25.93)
in the output area.

****

If you are satisfied with the report produced by the INFORMATION command, transfer the edited input frame to the output frame using the EXECUTE command.

Edit command(H for help) E

You would again be prompted for an input file to which you would reply with a full stop, and the output frame and file would be closed.

Inputfile(. to quit)

****(CHANNEL 79) End of plotter file MAPOUT after 258 records.****

Routine GPLAYOUT finished.

The final step is to list the new plotter file to a plotter using the EMAS command DRAWPICTURE. e.g.

Command: **DRAWPICTURE MAPOUT,.GP15**

This lists the newly created plotter file on GP15 (see figure 4 over the page).

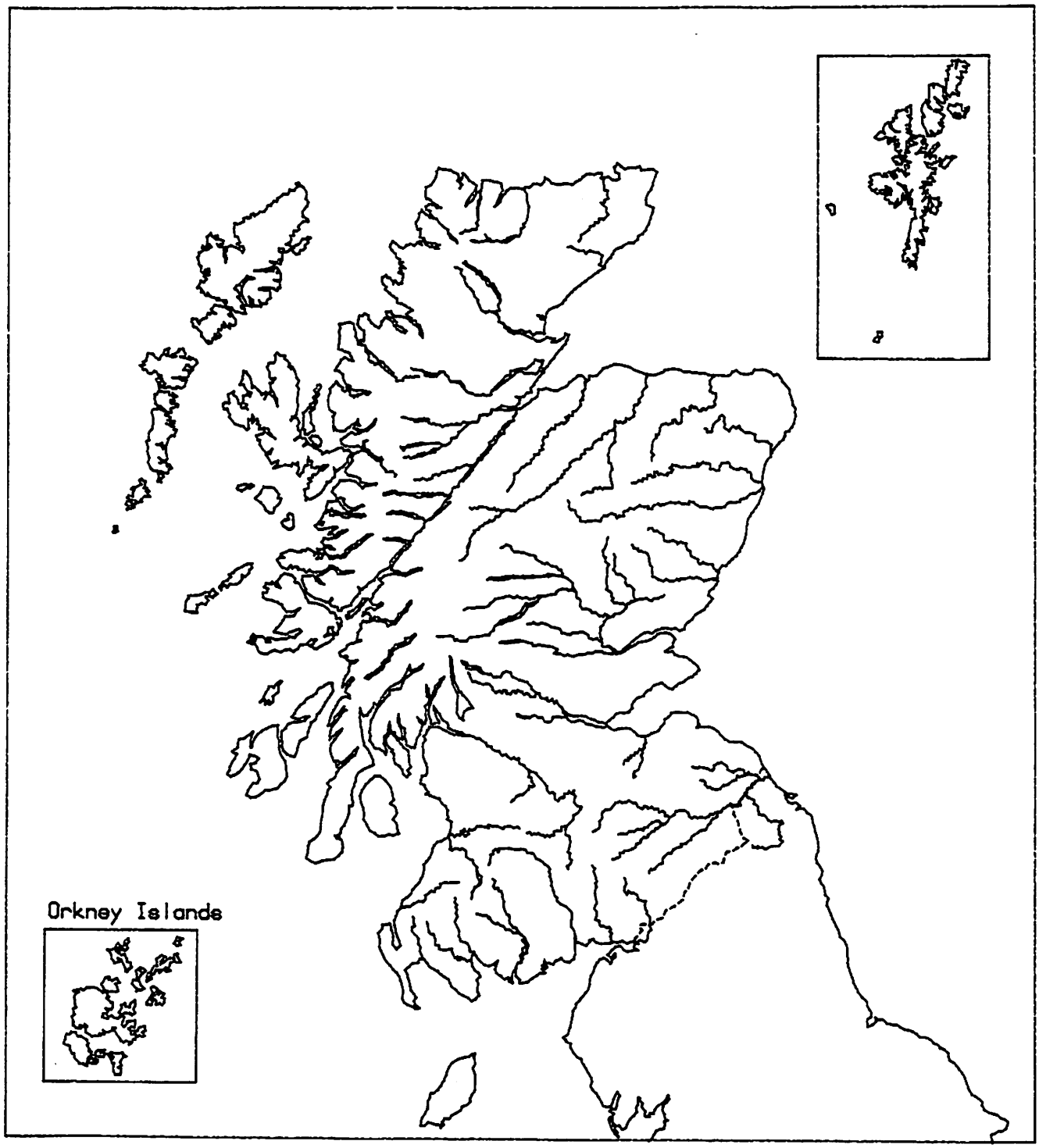


Figure 4