Introduction to Map Reading

03. **Time.** 1 x 40 minute period

04. **References.** ACP32/1 Chapters 1 and 3

05. **Stores.**

a.	Map case	*1*
b.	Sheets of paper to practice folding	*1 per student and instructor*
c.	Maps of different types and scales	*As available*

06. **Preparation.** Check stores

07. **Revision.** Nil

08. **Objectives.**

a. Describe the types and uses of maps

b. State rules for care of maps

c. Demonstrate the correct way to fold a map

d. Define map scale

09. **Introduction.** Map reading is an important skill in the ATC. A level of understanding about map reading runs though many areas of the ATC such as adventure training and fieldcraft, and forms the core of more advanced navigation in the air.

10. **What is a map**? *Explain*. A map is a 2 dimensional (flat) representation of an area. Maps come in a variety of media, including flat paper maps, books (atlases) or electronic forms.

Types of Map

11. *Explain.* Maps can be used to convey any sort of information that the map maker (cartographer) wishes to convey; typical types of map include:

a. Political maps – showing who owns or controls an area

b. Weather maps – showing weather conditions in an area

c. Geological maps – showing what's under the surface of an area

12. The type of map that this series of lessons will focus on are detailed topographic maps. These show the lie of the land and features directly upon its surface, with certain features that may be of use to the user highlighted (for example telephone boxes are insignificant features topographically, but are included because they're useful and easily recognisable).

13. Within the UK, the armed forces – and therefore the cadet forces too – use maps made by the Ordnance Survey (OS). OS make a variety of maps, all highly detailed and accurate.

14. **Care of maps.** *Explain and demonstrate.* Maps are fragile and expensive, with a typical OS map costing from £5 to £10 and being made of nothing more durable than paper. To look after your map, always follow these rules:

a. *Keep maps dry.* Either use a map case or – if using small printed sections – laminate them

b. *Don't mark maps*. Paper maps should never be marked – if using laminated maps or map cases, non-permanent OHP pens or Chinagraph pencils can be used to make temporary marks.

c. *Keep maps folded.* A sudden burst of wind can blow your map away if it's unfolded – even if you hang on, it can often tear the map.

d. Fold maps correctly. To fold a map:

(1) Fold the map in two so that there is a North and a South section (so that the fold line itself runs east-west)

(2) Fold the map east-west in a concertina pattern – if folding a map for the first time, this is best carried out by:

(3) First folding the map repeatedly in half east-west (so that the fold lines run north-south) until the desired with is reached. To produce a map of the desired size, it may be necessary to do the final fold in three instead of two.

(4) Pressing the fold lines in (take your shoes off and press with your feet!)

(5) Unfold the east-west folds

(6) Re-fold in the concertina pattern using the folds as a guide.

Scale

15. *Explain.* Maps are produced to different scales. Scales are defined by a ratio, such as 1:1,000,000 – meaning that features on the map are drawn at a millionth of the size of the real one. The metric system makes conversion very easy – because there are one million millimetres in a kilometre, one millimetre on that map would represent one kilometre on the ground. Knowing a conversion such as this is the easiest way to understand distance on a map and carry out quick calculations.

16. *Explain, showing examples if available.* The map you will require will depend on your activity. Here are some of the choices available:

a. 1: 10,000 (1cm = 100m) Orienteering, town planning

b. 1: 25,000 (1cm = 250m) Walking

c. 1: 50,000 (1cm = 500m) Walking, cycling

d. 1: 100,000 (1cm = 1,000m) Cycling, hostelling, route planning

e. 1: 250,000 (1cm = 2,500m) Cycling , motoring, flying

f. 1: 1,000,000 (1cm = 10km) Long distance air navigation

17. *Explain.* Remember - the larger the number on the right hand side of the scale ratio, the larger the area covered and so less detail. Maps with large numbers are therefore known as *small scale* maps (ie the features on them appear small) whereas maps with smaller numbers are known as *large scale* maps (the same feature would cover much more of a large scale map.)

18. *Explain.* The most popular maps that are used by walkers are:

a. Landranger series (OS) *1: 50,000* 2cm per km

b. Outdoor Leisure (OS) *1: 25,000* 4cm per km

19. *Explain.* The detail required on a map will depend on the area being covered. An area which is small is best served with a very detailed map but if covering ground quickly a smaller map is more useful – you don't want to be changing between 1:25,000 scale maps every two minutes in a fighter aircraft! Essentially, selection of scale comes down to a compromise between the amount of detail required and the need for compactness of the map.

20. **Revision.** *Explain.* A map is most accurate on the day that it is produced and will continue to be accurate until the features on it are changed. If you had planned an expedition in the classroom then went to the start point to find the valley had been dammed and the river is now a reservoir, this could prove to be a heavy dampener on the walk and your enjoyment. Some maps may stay fairly constant - for example, those of mountainous areas, as it takes many years to erode mountains and the area is not likely to be developed. You must be aware of urban areas like towns and villages because they can grow or have road bypasses built. Maps covering these areas

may therefore change frequently. Before you start check the revision date of the map you are about to use.

21. **End of lesson drill.**

a. Summary of key points.

(1) Maps should always be treated with care

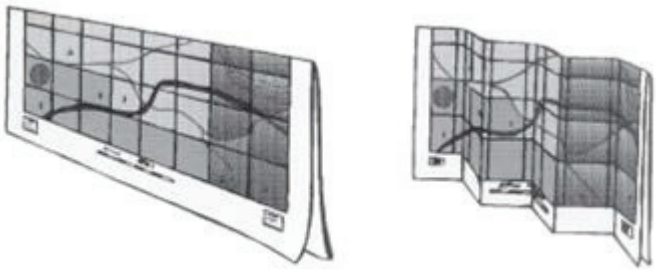
(2) Scales are expressed as a ratio: 1:25,000 means that a distance on a map is 25,000 times greater on the ground

(3) Select a map which gives a good balance between detail and compactness

(4) Make sure your map is up-to-date!

b. Questions to and from the class.

c. Look forward to next lesson.



Folding a map