

1979/14. A computer program for the production of sand and gravel resources plots.

E.L. Martin

Abstract

A modified ternary diagram plot programme for the Wang 700/720 produces diagrams of the type used by the Institute of Geological Sciences for sand and gravel resource classification.

INTRODUCTION

The Institute of Geological Sciences classification for sand and gravel resources uses twelve divisions based on percentages of sand, gravel and clay where the percentage of clay is ≤ 40 (fig. 1).

Samples may be plotted on a triangular diagram and classified by means of an overlay (fig. 1). For most purposes the triangle may be truncated to a trapezium as deposits containing more than 40% clay do not constitute sand and gravel resources.

A plotting programme for the Wang 700/720 was compiled by modification of the standard ternary plot programme 15A1 (Martin, 1976).

OUTLINE OF PROGRAMME

- (1) Gravel and sand percentages are entered and their sum subtracted from 100 to give per cent clay.
- (2) Per cent gravel is recalculated on the basis of total sand + gravel (i.e. excluding clay).
- (3) The recalculated per cent gravel is reduced by 50 so that 0% gravel = -50 and 100% gravel = +50. Thus the y - axis bisects the triangle SCG.
- (4) The new gravel value is corrected by applying a factor of $1 - \text{clay} \% / 100$.
- (5) A factor of 1.16 (i.e. $2 \tan SCG$) is applied to equalise the x and y axes within an equilateral triangle.
- (6) An overall scale factor (5) is applied to produce a triangle of a size suitable for publication. $SG = 147\text{mm}$.

OPERATION OF PROGRAMME

- (1) PRIME, GO (overall scale factor (5) will be displayed - enter alternative factor if required), GO.
- (2) Enter % gravel, GO, % sand, GO.
- (3) Repeat (2) as required.
- (4) Enter values for the corners of the trapezium (0,100; 100,0; 0,60; 60,0), and, if needed, for apex C (0,0; SKIP IF ERROR; SEARCH, 1).

After making any programme alterations during plotting Key SEARCH, 1.

Point labelling

Alter step 096 to STOP. Special function Keys(0-9) are used to label point after plotting; press special function key once for each digit used to label point. After labelling press special function Key 11 once for each digit used in label. For more comprehensive instructions see Table 1 in Martin (1976).

Other modifications

Steps 093 and 094 control upper/lower case and symbol, respectively.

The shape of the triangle may be altered if required by means of the x-scale factor and the overall scale factor.

REFERENCE

MARTIN, E.L. 1976. Computer programmes for the production of triangular variation diagrams. Unpubl.Rep.Tasm.Dep.Mines 1976/7.

[9 April 1979]

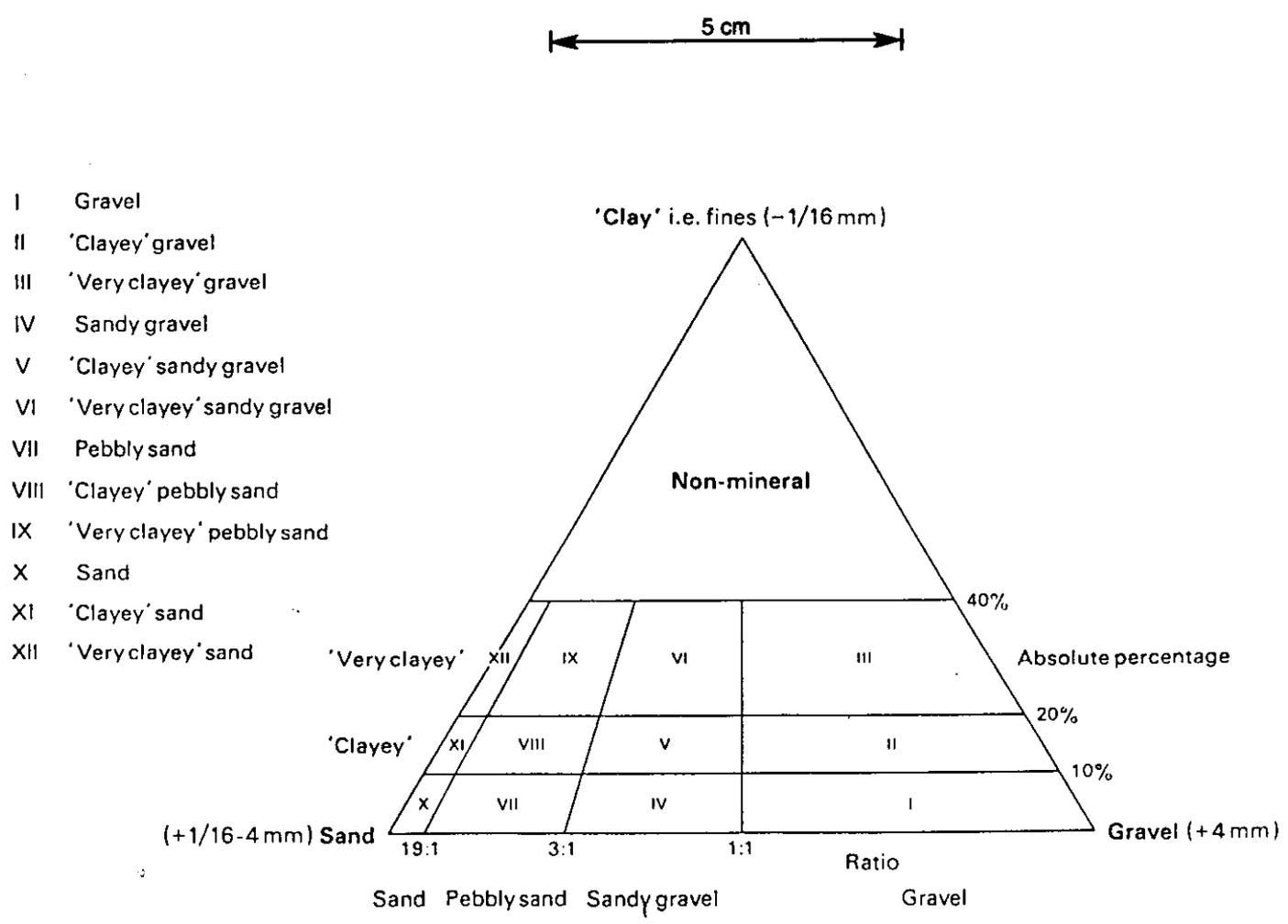


Figure 1. Classification for sand and gravel resources.