FRED

A brief guide

April 21st, 2016

FRED is an electronic, digital, hydrostatic level. A plastic tube (approx. 25 m long), containing fluid, gives readings, in mm, above or below a fixed base. The recorded data is entered into a computer programme called Surfer (Golden Software.com) and used to create a contour map, a 3D surface image, or a cross section of the feature.

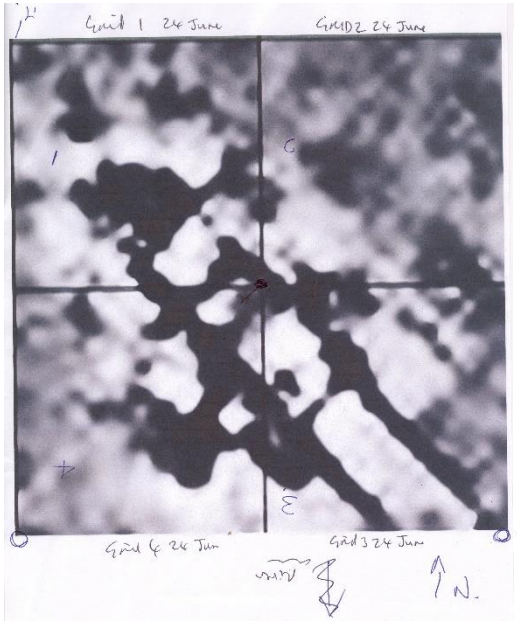
What's it for?

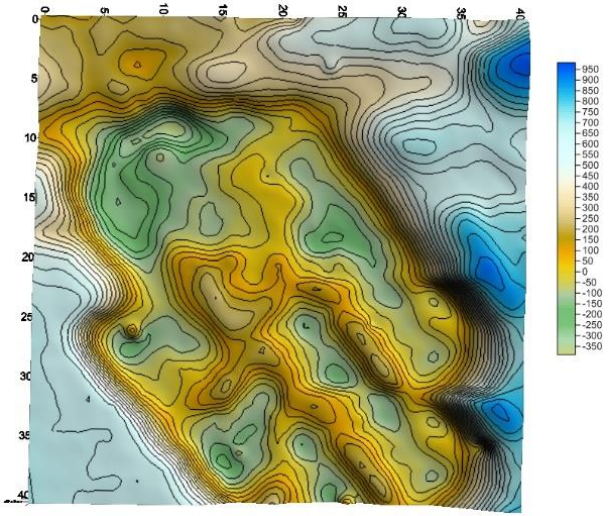
YCCCART uses it in 3 ways:

1 Show surface features in 3D;

2 Look for any potential correlation of RM 15 results with surface features;

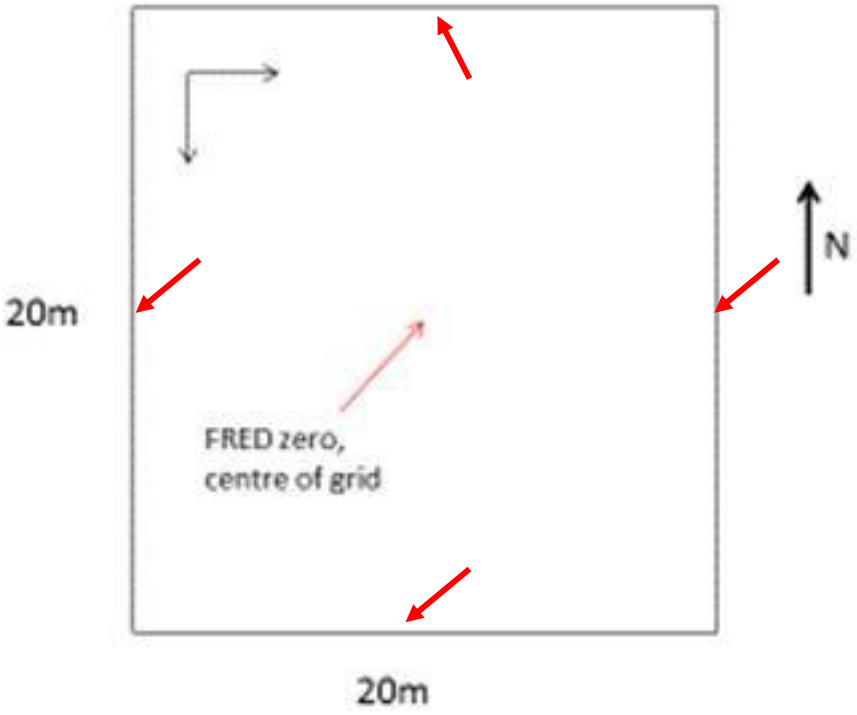
(3 look for correlations with other manual surveys)





How is it used?

Grid sizes are determined by the feature.
The zero point for the grid, (FRED zero), has to be placed so that the feature within the grid can be covered (tube length 25m).
Degree of definition required determines the measurement intervals (usually 1m in the X and Y axes).
(Maximum grid size is approx. 30 x 30 m, with FRED zero in the middle)



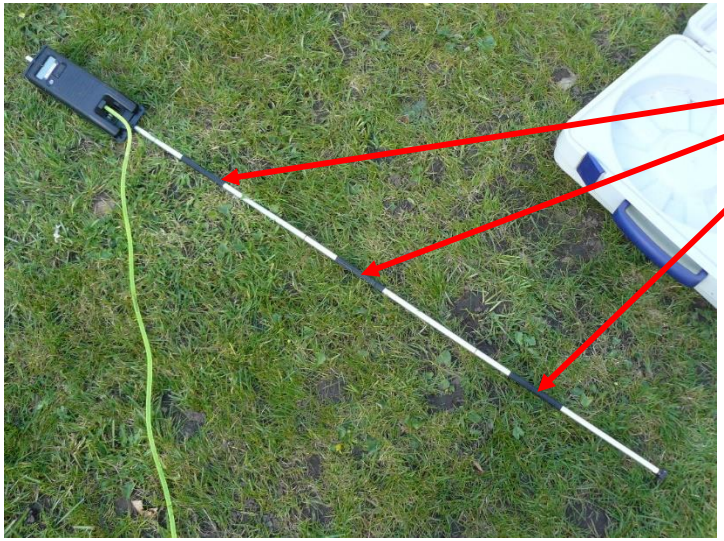
For example, for this grid (20 x 20m), FRED zero can be in the centre, or centrally along any edge, so that the tubing can reach to all the corners.

RAW DATA

- Record position of FRED zero
- Direction of North
- Note point at which survey starts
- Direction of X and Y axes
- Start at line '0'm on both X and Y axes
- Finish at line '20'm (in a 20 x 20 m grid)
- Z axis; height above / below FRED zero

Setting up
1 Getting FRED ready

Done:



3 extension tubes are usually sufficient

Tie the tube to the stem

Ready to go!

Setting up
2 Setting FRED zero

Place the ‘base plate’ in the required position

Unravel all the tubing and place the reel near the base plate.

Turn the black knob, fully, anticlockwise. The indicator (arrow) flashes intermittently.

Stand the instrument vertically on the base plate
(can be easily reset at the same point if it goes ‘off’ during a survey)

Set to zero

1 Press the button……..

2 Wait for lines to settle….

3 When it goes to zero……

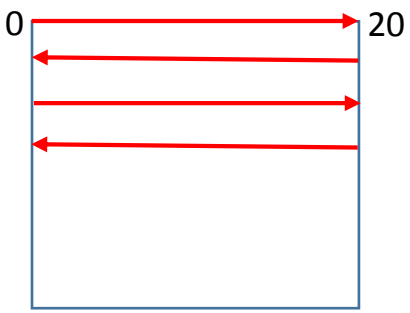
4 Press the button again…….

5 display reads ‘ni’ …….

6 It is now set to ‘zero’

In use……

The grid is walked in a zig-zag



The arrow ‘points’ to FRED zero.

A 234 mm above FRED zero

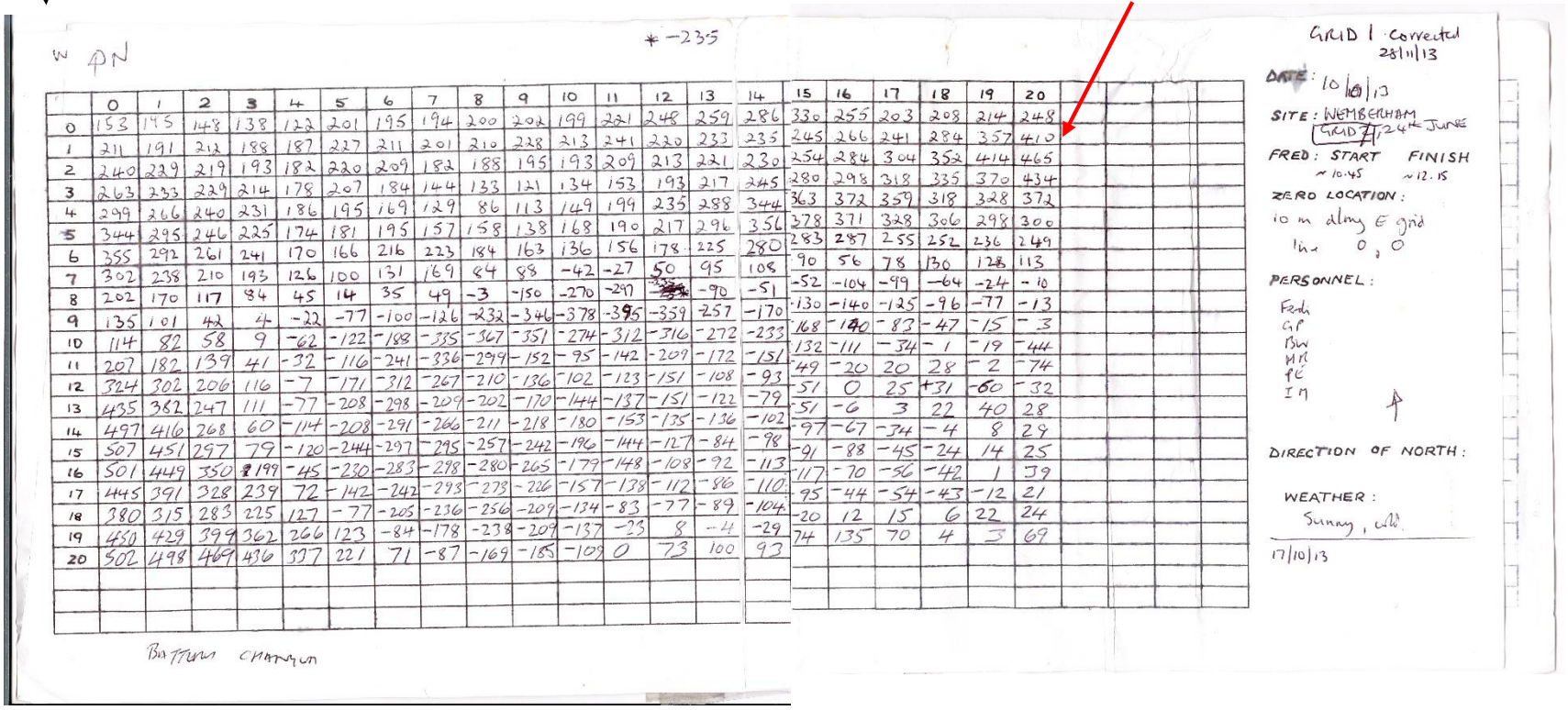
B 229mm below FRED zero (-229)

Recording the raw data

(The grid is prepared beforehand)

X Y → FRED readings = Z axis

At the 20m end of line ‘X 0’, the next line, X 1m, starts at 20m, and so on…..



GRID 1 corrected 28/11/13

DATE: 10/10/13

SITE: WEMBERHAM GRID 7 24th JUNE

FRED: START ~10.45 FINISH ~12.15

ZERO LOCATION: 10 m along E grid line 0, 0

PERSONNEL: Fred GP BW MR PE IM

DIRECTION OF NORTH:

WEATHER: Sunny, cold

17/10/13

To Switch off

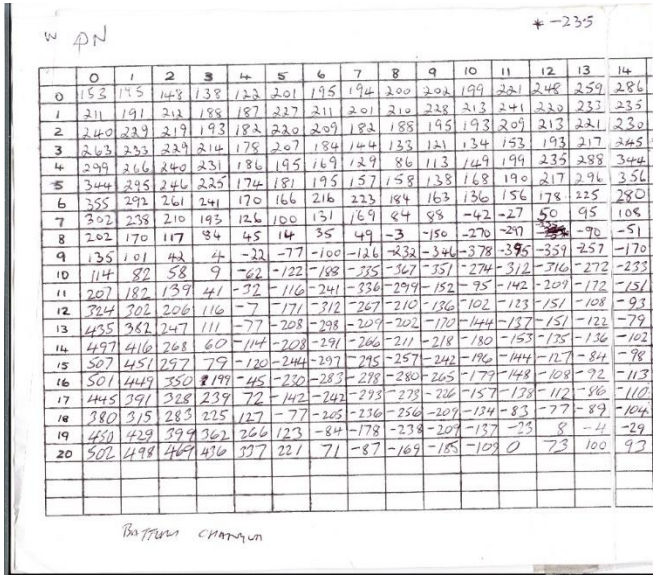
Hold the button down…….Off

Turn the knob on the base reel fully clockwise to close it.

For ‘Surfer’

Xm	Ym	Zmm
0	0	-327
0	1	-284
0	2	-227
0	3	-190
0	4	-201
0	5	-188
0	6	-170
0	7	-137
0	8	-138
0	9	-119
0	10	-120
0	11	-119
0	12	-94
0	13	-70
0	14	-21
0	15	-10
0	16	17
0	17	-8
0	18	-8
0	19	19
0	20	6
1	0	-328
1	1	-266
1	2	-219
1	3	-180
1	4	-194
1	5	-163
1	6	-157
1	7	-136
1	8	-135
1	9	-124
1	10	-124
1	11	-122
1	12	-86
1	13	-65
1	14	-32
1	15	10

Etc to X = 20 m



Transfer raw data to an EXEL file (this is a 20 x 20 m grid)

Surfer


CCleaner
acer
Surfer 10
(64-bit)
acer
archeosurv...
Xara Web
Designer 7
TerraSurv