

CANADA

DEPARTMENT OF ENERGY, MINES AND RESOURCES

Geological Survey of Canada



UGAIS DATA RECORD INSTRUCTION MANUAL

J. R. Bélanger  
Urban Geology Unit  
Terrain Sciences Division  
Geological Survey of Canada

OPEN FILE 292

---

OTTAWA  
1975

This document was produced  
by scanning the original publication.

Ce document est le produit d'une  
numérisation par balayage  
de la publication originale.

UGAIS\* DATA RECORD  
INSTRUCTION MANUAL

J.R. Bélanger  
Urban Geology Unit  
Terrain Sciences Division  
Geological Survey of Canada  
601 Booth Street  
Ottawa K1A 0E8



## UGAIS DATA RECORD

During the early stages of development of the Urban Geology Automated Information System (UGAIS), emphasis was placed on the development of an efficient system for the storage and retrieval of geoscientific information. The measure of efficiency was defined by minimum computer time to search the data bank, process the information, and give the results. In order to achieve fast storage and retrieval, the input record (Data Record Sheet) was made to conform rigorously to a pre-established format including the use of standard mnemonic codes, fixed field for each parameter, and a fixed length for each record. Such a compilation method is inflexible; it cannot be readily adapted to different geological environments, different terminologies, or different users' needs. The original Data Record Sheet also had the disadvantage of being fairly complex and requiring a computer oriented geologist to compile information from source documents.

Since the first Data Record Sheet was designed, introduction of high-level computer languages, availability of data bank management systems, and improvement of the cost-performance ratio of computers has permitted a reorientation of the system: instead of adapting the user to the system, the system is being adapted to the user. The aim of a user-oriented system is to provide simplicity and flexibility of the input and output information in a format convenient to the user.

The first step towards a user-oriented system was to devise a compilation sheet that would resemble a standard engineering report. This was achieved by eliminating mnemonic codes, standard parameters, fixed format, and fixed record length. The format of the new Data

Record enables the user to fill in the information by hand or with a typewriter using standard English. The only restriction is the maximum number of characters on each line; however, the user can continue a long description on following lines using as many lines as needed.

The following explanation of the UGAIS Data Record includes suggestions on how to compile the information to facilitate decoding of the data by computer program and how to ensure a high quality of data input.

The information contained on the Data Record is transferred to 88-column computer-punched cards. The maximum number of characters allowed for each parameter of the general information and for each line of the geological description is indicated in two ways: by a dash line, each segment of which corresponds to one character; and by a number above each column showing the maximum number of characters.

The use of dash lines instead of boxes permits the use of a typewriter, is better suited to a free format, and improves the legibility of the record. The dash lines are used to indicate the maximum number of characters rather than simply to show the position of each character. Each character therefore does not have to coincide with one dash.

Note: A blank is considered as a character. )

e.g.: RECORD NUMBER         3  2  8   correct

RECORD NUMBER   3  2  8   correct

The position of the description is irrelevant, i.e., it does not have to be right or left justified. Each word, however, should be written clearly and separated from the next.

e.g.: REFERENCE   A  C   -   1  8  0  0                        correct

REFERENCE               A  C   -               1  8  0  0   correct

SOIL TYPE	
16	
SANDY GRAVEL	correct
SAN DY GRAVEL	wrong
SANDY GRAVEL	correct

There is no limit on the number of lines used to describe one horizon or stratum. Words can be hyphenated and continued on the next line; the position of the hyphen does not have to obey the rules of English usage. It is recommended, however, that descriptions be concise. The use of abbreviations is permitted but care must be taken not to use misleading abbreviations since the records will be analyzed by computer programs. Letters of the Greek alphabet should not be used.

#### General Information

Note: The number preceding each section of the following refers to the corresponding number on the sample UGAIS Data Record attached.

1. File Number: the file number will not be computerized, its use is left entirely to the user or the person in charge of the regional data bank. It may correspond to the file number of the original report or to a local filing system.
2. Date: the data the Record is compiled. This date will not be computerized.
3. Record Number: the record number is used to identify each record. Each record should have an unique record number. If a report needs more than one Data Record to compile, the same record number should be used on both. The

record number is used mainly to retrieve the information from the data bank, manually or with a program, by selecting the records from a computer location map on which each record is identified by its record number.

Maximum number of characters: 5

4. Card: the card parameter is already filled in; it is used to identify each punched card to prevent any mix-up in the card sequence.

5. N.T.S. Map: National Topographic System Map identification number on which the record is located. It is preferable to use the largest scale available to locate the record with a better precision. Maximum number of characters: 8.  
e.g.: Ottawa Map at scale 1:25,000.

N.T.S. Map 31G5g---

6. U.T.M. Zone: Universal Transverse Mercator Zone, appearing on the map where the record is located. The U.T.M. Zones vary from 7 to 22 for Canada. If the study area overlaps two zones, only one grid reference system for the entire area should be used.

Maximum number of characters: 2

7. Easting: Easting U.T.M. coordinate of the record to the nearest metre.

Maximum number of characters: 6

8. Northing: Northing U.T.M. coordinate of the record to the nearest metre.

Maximum number of characters: 7

9. Location Precision: the precision with which the record can be located by U.T.M. coordinates.

Maximum number of characters: 4

e.g.: LOCATION PRECISION     10 ft.

means that the real location of the record is not more than 10 feet away from the given U.T.M. coordinates.

10. Reference: the reference is a series of alphanumeric characters used to refer back to the original report. The standard procedure is to use the first characters as key identifier to the agency from which the information is collected and the remaining space is used to register the file number of the original report.

Maximum number of characters: 14

e.g.: REFERENCE     AC - 1800     

code given to the engineering company

serial number of the record given by the engineering company.

11. Date: Month and year in which the investigation was done.

Maximum number of characters: 2 - 2

12. Surface elevation: ground elevation in feet above sea level (a.s.l.).



13. Method: method used to obtain the geological log. Since there is a large number of variations in the drilling or sampling methods which may affect data quality, a list of methods and corresponding codes is attached. The list of methods can be increased at the discretion of the data bank manager at the local level.

Maximum number of characters: 2

14. Purpose: purpose of the geological investigation. As in the case of method, a list of codes and purposes is provided.

Maximum number of characters: 2

15. Penetration: specification for the dynamic penetration resistance tests such as "Hammer" weight in pounds, "Drop" in inches, and the "Spoon Diameter" in inches. The standard is a hammer of 140 pounds dropped 30 inches and a spoon 2 inches in diameter.

Maximum number of characters: 3 - 3 - 3

e.g.: PENETRATION HAMMER          140 lb.

  DROP                  30 in.

  SPOON DIAM.   2 in. (outside diam.)

16. Reliability: reliability of the information according to the following criteria:

1 = Logged by professional with adequate laboratory tests, the data is clearly recorded.

2 = Reliable information but incomplete.

- 3 = The description is approximately correct but interpretation is difficult because of lack of information and doubtful terminology.
- 4 = The record gives some indication of subsurface conditions, but the material is unknown.

17. Bottom of hole: depth of the hole, or difference between the surface elevation and the lowest point where geological information is available.

Maximum number of characters: 4 (including decimal point)

Geo-engineering information

Note: the number above each column indicates the maximum number of characters permitted on each line.

18. Record number: same number as the one written in the general information. The number is written only on the first line; the shaded area shows that the number will be duplicated when keypunching is done. Maximum number of characters: 5

19. Card: this is an identification for each line.

20. Depth: depth from the surface at which the soil type starts. The value is expressed in feet, with or without a decimal point. The depth is written on the same line as the beginning of the soil description.

Maximum number of characters: 6 (including decimal point).

21. Soil type: the materials present at that level. Each time the materials or soil type change, a new depth should be given so each horizon or unit can be

identified. If all the information cannot be compiled on one Data Record it is possible to continue onto another Data Record by writing the word CONTINUE on the "Soil Type" column of card 20 (last line). The same Record Number is used on the next record.

Maximum number of characters per line:

16 including blanks.

22. Description: description of the materials or soil given in "Soil Type" column. The description includes the colour, percentage of each material, chemical and physical properties, structure, genetic or any other significant parameter appearing on the original report. All numeric values should be identified, e.g.: shear strength, bearing capacity, etc.
23. Atterberg: Atterberg limits. The first column is used to register the depth at which the sample was taken. P.L. = plastic limit; M.C. = moisture content; L.L. = liquid limit. Maximum number of characters: 4 - 3 - 3 - 3.
24. Penetration: penetration resistance in blows per foot. The first column is the depth at which the test was performed and the second is the number of blows required to drive the spoon one foot. If the spoon is "pushed" the number of blows per foot should be recorded as 0.
25. Water: depth at which water was found. The water depth is used to register the surface water level as well as confined aquifers.

PURPOSE OF HOLE	CODES
Water supply	00
-Municipal	01
-Industrial	02
-Domestic	03
-Irrigation	04
-Farm	05
-Institutional	06
Observation well	07
Test hole	08
Injection well	09
Dewatering & relief	10
Engineering testing	11
G.S.C. test hole	12
Recreation	13
Seismic shot hole	14
Inspector's observation	15
Excavation	16
Gas well	17

METHOD	CODES
Rotary hydraulic	10
Cable tool	11
Diamond drill	12
Jetted	13
Bored	14
Power auger	15
Hollow stem auger	16
Reverse rotary	17
Air percussion	18
Hand auger	19
Hand dug	20
Seismic	21
Excavated	22
trench	23
Penetrometer	24
Dynamic cone	25
Natural exposure	26
Churn drill	27
Bucket auger	28
Modified washed boring	29
Caisson	



# UGAIS DATA RECORD

FILE NO. 9105-0005

DATE 20 May 1958

RECORD NUMBER 1

M.T.S. MAP 7165

UTM ZONE 18

EASTING 4560

NORTHING 50520

LOCATION PRECISION 31-50.11

REFERENCE 45-105-6

DATE (M/Y) 58 5

SURFACE ELEV. 532.7 ft. ABL

METHOD 6B PURPOSE BT

PENETRATION: HAMMER 440 lb.

DROP 10 in.

SPOON DIAM. 30 in.

RELIABILITY 10

BOTTOM OF MOLE (DEPTH) 11 ft.

RECORD NUMBER	DEPTH	SOIL TYPE	DESCRIPTION	Colour, Grain Size, Plasticity, etc.	ATTERBERG				PENETRATION WATER					
					LIQ. LIMIT	PL. LIMIT	SHRINKAGE	UNIFORMITY	DEPTH	LIQ. LIMIT	PL. LIMIT	UNIFORMITY		
1	0-0	SANDY GRAVEL												
2	0-0	SILT-CLAY												
3	0-0	SANDY SILT												
4	0-0	SANDY SILT												
5	0-0	SANDY SILT												
6	0-0	SANDY SILT												
7	0-0	SANDY SILT												
8	0-0	SANDY SILT												
9	0-0	SANDY SILT												
10	0-0	SANDY SILT												
11	0-0	SANDY SILT												
12	0-0	SANDY SILT												
13	0-0	SANDY SILT												
14	0-0	SANDY SILT												
15	0-0	SANDY SILT												
16	0-0	SANDY SILT												
17	0-0	SANDY SILT												
18	0-0	SANDY SILT												
19	0-0	SANDY SILT												
20	0-0	SANDY SILT												

Column



# UGAIS DATA RECORD

RECORD NUMBER	DEPTH	SOIL TYPE	DESCRIPTION	ATTENDING P. I. N. G.	PENETRATION DEPTH	PENETRATION RATE
316	0.	Fill, ash & brick	very loose-dry		5.	4
	11.4	Sandy clay, trace of pea gravel	Water returned at 14 ft. after casing was driven		12.	18
	23.	Clay with thin sand lenses	Very compact, dark brown		15.	23
	29.6	Limestone bed-rock	Dark grey, weathered & fractured		20.	22
	31.6	Limestone	Alternating dark & light grey		23.	47
					29.	31
					35.	59
					41.6	60

1 FILE NO. 18  
 2 DATE Feb. 2 1974  
 3 RECORD NUMBER 316 4 CARD 8  
 5 N.T.S. MAP 30K12b  
 6 UTM ZONE 12  
 7 EASTING 536200  
 8 NORTHING 2745160  
 9 LOCATION PRECISION 20 ft.  
 10 REFERENCE ARE-AX-332-2  
 11 DATE (M/Y) 05 60  
 12 SURFACE ELEV. 102.4 ft. ASL  
 13 METHOD 26 14 PURPOSE 11  
 15 PENETRATION: HAMMER 140 lb.  
                                 DROP 30 in.  
                                 SPOON DIAM. 2 in.  
 16 RELIABILITY 1  
 17 BOTTOM OF HOLE (DEPTH) 42 ft.

Column