

**Electronic Transfer of
Geotechnical
and
Geoenvironmental Data
AGS4
(Edition 4.0)**

Guidance Document

Amalgamated Samples

ACKNOWLEDGEMENTS

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DOCUMENT HISTORY

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0	First Issue	1 Mar 2011

1 Introduction

It may be necessary to amalgamate two or more samples for laboratory testing. The amalgamated samples must be reported in the AGS Data File such that tests on these samples can be correctly assigned to the source samples and the locations from whence that originated.

2 Background

It may be necessary to amalgamate two or more samples for laboratory testing. Reasons for amalgamating samples include:-

- Creating sufficient materials for particular laboratory tests.
- Replication of material mixes likely from site grading exercises.

Amalgamated samples may comprise various combinations of samples:-

- Two or more samples from the same exploratory position (e.g. borehole or trial pit)
 - Amalgamation is often performed in this way when sample quantities are not sufficient to perform a particular test and similar material is available from the same exploratory position.
- Two or more samples from different exploratory positions
 - Example Sample A at 1m from BH1, Sample B at 1m from BH2, Sample C, at 1.2m from BH3.
 - This scenario may arise where the engineer wants to perform multiple laboratory tests on a quantity of material from the same stratum that stretches across the site.

The above configurations mean test results cannot correctly be attributed against any one sample. The following guidance document outlines the methodology for reporting such occurrences.

The below guidance in this document refers to the SAMP group whose extract from the main AGS4 format document is included below for completeness and reference.

Group Name: SAMP - Sample Information					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
	SAMP_BASE	m	2DP	Depth to base of sample	25.00
	SAMP_DTIM	yyyy-mm-ddThh:mm	DT	Date and time sample taken	1991-03-26T09:28
	SAMP_UBLO		ODP	Number of blows required to drive sampler	35
	SAMP_CONT		X	Sample container	Metal UT100 tube
	SAMP_PREP		X	Details of sample preparation at time of sampling	Preservative added
	SAMP_SDIA	mm	ODP	Sample diameter	100
	SAMP_WDEP	m	2DP	Depth to water below ground surface at time of sampling	4.50
	SAMP_RECV	%	ODP	Sample recovery as a percentage of driven sample	60
	SAMP_TECH		X	Sampling technique/method	Purged
	SAMP_MATX		X	Sample matrix	Liquid
	SAMP_TYPC		X	Sample QA type (Normal, blank or spike)	Normal
	SAMP_WHO		X	Samplers initials or name	MS
	SAMP_WHY		X	Reason for sampling	Routine monitoring sample
	SAMP_REM		X	Sample remarks	
	SAMP_DESC		X	Sample/specimen description	Grey silty CLAY
	SAMP_DESD	yyyy-mm-dd	DT	Date sample described	2008-11-03
	SAMP_LOG		X	Person responsible for sample/specimen description	AN Other
	SAMP_COND		X	Condition and representativeness of sample	Sample softened, or fractured by drilling
	SAMP_CLSS		X	Sample classification as required by EN ISO 14688-1	5
	SAMP_BAR	Bar	1DP	Barometric pressure at time of sampling	99.1

Continued overleaf

Group Name: SAMP - Sample Information					
Status	Heading	Suggested Unit / Type		Description	Example
	SAMP_TEMP	degC	ODP	Sample temperature at time of sampling	8
	SAMP_PRES	Bar	1DP	Gas pressure (above barometric)	0.2
	SAMP_FLOW	l/min	1DP	Gas flow rate	0.2
	SAMP_ETIM	yyyy-mm-ddThh:mm	DT	Date and time sampling completed	1991-05-01T10:03
	SAMP_DURN	hh:mm:ss	T	Sampling duration	30:15:00
	SAMP_CAPT		X	Caption used to describe sample	BH1,1.00m,B+BH2,1.00m,B
	SAMP_LINK		RL	Sample record link	MONG BH1 Pipe1
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (eg sampling field sheets, sample description records)	FS67

Notes for Guidance

- The SAMP group is used to record all samples; eg those taken during field sampling or monitoring or sub-samples created in the laboratory.
- SAMP_ID has been added to the sample key set. Unique sample identifiers can be used to enhance the process of reintegration of testing results from subcontract laboratories and/or used to contain barcode or pre-made label references. The addition of the SAMP_ID heading into the SAMP group provides greater flexibility for accommodating different process methodologies. A full explanation of example uses of SAMP_ID are given in on the AGS website.
- SAMP_ID does not have to be used and can be NULL (Rule 12). The remaining descriptive key/label headings can be used on their own.
- SAMP_LINK has been added to permit the source of samples to be fully detailed. The SAMP_LINK field is a Record Link (RL) format as defined in Rule 11 and accompanying Note v.
- In selecting abbreviations for use in SAMP_TYPE, allowance should be made for use of additional codification or suffixes to standard abbreviations to reflect the sample types and collection methods applying to measurement / payment purposes.
- SAMP_PREP allow details of the sample preparation to be included. This would typically be used to detail the precautions taken with samples for further chemical or environmental testing.
- SAMP_LOG and SAMP_DESD allow inclusion of the name of the person describing the sample and date this was carried out as required in ISO 14688-1, Section 6 and EN ISO 14689-1, Section 5.
- SAMP_COND has been included to provide for any comments on condition, representativeness and reliability of the sample which are requirements of EN ISO 14688-1 (Section 6) and BS 5930 respectively. This heading together with the sample recovery SAMP_RECV provide useful data to those specifying laboratory scheduling. Data included if not 100%.
- The requirement of EN ISO 14688-1 (Section 6) and EN ISO 14689-1 (Section 5) to record the details of origin, collection and handling of samples are included in the associated groups.
- SAMP_ETIM and SAMP_DURN allow for data that describes the duration of sampling event if that is required. This can be important in environmental sampling applications.
- SAMP_CAPT provides for description of sample composition in the case of an amalgamated sample.

3 Guidance

3.1 Method using descriptive sample identifiers

All the original samples (before amalgamation) must be detailed in the SAMP group with their original location identifier, depth, sample reference, type and ID.

An amalgamated sample is a new sample with a sample type of AMAL. An additional record is included in the SAMP group for each amalgamated sample and details the origin of the sample as follows:

- The SAMP_TYPE for the amalgamated sample is set to AMAL. Note: It would not be applicable to report these samples on exploratory hole logs.
- A list of the samples that have been amalgamated to create the combined sample is included in SAMP_CAPT. The format of the SAMP_CAPT list should be as follows:

LOCA_ID, SAMP_TOP units of SAMP_TOP, SAMP_REF, SAMP_TYPE, SAMP_ID+

LOCA_ID, SAMP_TOP units of SAMP_TOP, SAMP_REF, SAMP_TYPE, SAMP_ID etc.

Note the symbol used between the sample definitions in the caption should be defined in TRAN_RCON. Typically a plus (+) symbol is used, however, it should still be defined.

Example – Single location amalgamated sample (sample comprising multiple samples from the same location.

```
"GROUP","SAMP"  
"HEADING","LOCA_ID","SAMP_TOP","SAMP_REF","SAMP_TYPE","SAMP_ID","SAMP_CAPT"  
"UNIT","","m","","",""  
"TYPE","ID","2DP","X","PA","ID","X"  
"DATA","TP1","2.50","1","B","",""  
"DATA","TP1","3.50","3","B","",""  
"DATA","TP1","4.50","5","B","",""  
"DATA","TP1","","","AMAL","","TP1,2.50m,1,B,+TP1,3.50m,3,B,+TP1,4.50m,5,B,"
```

Example – Multi location amalgamated sample (sample comprising samples from different location.

```

"GROUP","SAMP"
"HEADING","LOCA_ID","SAMP_TOP","SAMP_REF","SAMP_TYPE","SAMP_ID","SAMP_CAPT"
"UNIT","","m","","",""
"TYPE","ID","2DP","X","PA","ID","X"
"DATA","TP1","2.50","1","B","",""
"DATA","TP2","3.50","3","B","",""
"DATA","TP2","4.50","5","B","",""
"DATA","AMAL1","","","AMAL","","TP1,2.50m,1,B,+TP2,3.50m,3,B,+TP2,4.50m,5,B,"

```

Note that a new Location ID is created where sample from multiple locations are amalgamated. It would be inappropriate to use an existing Location ID as this would imply the amalgamation relates to a single existing location.

3.2 Method using non-descriptive sample identifiers

This method should be utilised when the SAMP_ID method is being used to reference samples, as set out in Note iv to the AGS Rules.

Note iv

Sample Referencing

The SAMP Group has 5 KEY FIELDS which comprise 4 descriptive FIELDS (LOCA_ID, SAMP_TOP, SAMP_TYPE, SAMP_REF) and a single non descriptive ID (SAMP_ID).

If descriptive information regarding the sample is not to be disclosed to the data receiver (for example a laboratory), then the single SAMP_ID field is used and the remaining 4 KEY FIELDS are transmitted as null values. If no such requirement exists then the 4 descriptive fields can be used and the SAMP_ID can either be transmitted or contain a null value.

This approach is extended to all GROUPs that are descended from SAMP in the Group Hierarchy (Section 7.3). Laboratory test results may therefore be reported using the single or descriptive Key Field options to reference the parent sample depending on what reference system was given to the laboratory.

Samples that have a null LOCA_ID in the SAMP Group are required to have a null parent entry in the LOCA group when submitted to comply with Rule 10c.

Note: where these options for sample data exchange are deployed, there may be requirements for additional data acceptance protocols for both data receivers and data producers to ensure that data containing only partial KEY FIELD information can be successfully recombined if data is to be round-tripped.

Where no LOCA_ID is being used (as in the example below), note that a null parent entry will be required in the LOCA group to comply with Rule 10c.

Rule 10c

Links are made between data rows in GROUPs by the KEY fields. Every entry made in the KEY fields in any GROUP must have an equivalent entry in its PARENT GROUP. The PARENT GROUP must be included within the data file. GROUP parentage is defined in Section 7.3.

The method is different to that for samples using descriptive identifiers. A new sample is created in the SAMP group with a new SAMP_ID and the sample type is set to AMAL. In the SAMP_CAPT field list all the samples that have been amalgamated to create this one combined sample, referenced by the SAMP_ID values only.

For example:

```
"GROUP","SAMP"  
"HEADING","LOCA_ID","SAMP_TOP","SAMP_REF","SAMP_TYPE","SAMP_ID","SAMP_CAPT"  
"UNIT","","m","","",""  
"TYPE","ID","2DP","X","PA","ID","X"  
"DATA","","","","23-743628","  
"DATA","","","","23-743634","  
"DATA","","","","23-743715","  
"DATA","","","","AMAL","23-743879","23-743628+23-743634+23-743715"
```

Where only SAMP_ID is being used, this final line would be:

```
"DATA","","","","23-743879","23-743628+23-743634+23-743715"
```

3.3 Method where both descriptive sample identifiers and SAMP_ID are used

Where systems are in place that utilise both the descriptive sample identifiers and the non-descriptive SAMP_ID, the two methodologies outlined above can be utilised in combination, but it is recommended that the SAMP_CAPT field is populated using the SAMP_ID values.

```
"GROUP","SAMP"  
"HEADING","LOCA_ID","SAMP_TOP","SAMP_REF","SAMP_TYPE","SAMP_ID","SAMP_CAPT"  
"UNIT","","m","","",""  
"TYPE","ID","2DP","X","PA","ID","X"  
"DATA","TP1","2.50","1","B","23-743628","  
"DATA","TP2","3.50","3","B","23-743634","  
"DATA","TP2","4.50","5","B","23-743715","  
"DATA","AMAL1","","","AMAL","23-743879","23-743628+23-743634+23-743715"
```