Electronic Transfer of Geotechnical and Geoenvironmental Data

AGS4

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Comment and feedback from the wider geotechnical and geoenvironmental industry has also been fundamental to the ongoing evolution of the AGS Format, ensuring that the needs of the industry and its clients continue to be met.

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FOREWORD

The AGS Data Management Working Party continually monitors the use of the AGS Format within the industry and strives to ensure its relevance to current working practice.

In response to new laboratory industry standards and updated UK practice the AGS4.0.4 Version (February 2017) document has been updated and amended and shall be known as “AGS 4.1”. Version 4.1 represents a substantial update of the Data Dictionary, introducing 24 new Groups, some of which replace Groups such as ERES, IPRG and IPRT. Detailed changes are listed in Section 6.3.

The Rules have not changed since version 4.0.4, but they have been moved into a new section (4.1.1) and tabulated for clarity. Moving the rules into a discrete section will allow the format and this document to be developed using other AGS approved file formats to maximise the potential for web-enabled transfer of data. Note that any new file formats shall be compliant with the Data Dictionary.

Whilst the AGS Format is used throughout the world, this document is specifically written for use in accordance with UK practice. Please contact the AGS secretariat for advice on adoption of the AGS Format internationally.

The use of BS 8574:2014 should be used to support the consistent and transparent use of the AGS Format in ground engineering projects.

Jackie Bland

Working Party Chair 2010-Present

PUBLICATION HISTORY

Edition Reference	Date of issue	Amendments
4.1	December 2020	For amendments see Change Log at www.ags.org.uk
4.0.4	February 2017	Addendum to 4.0.3
4.0.3	October 2011	Addendum to 4.0.2
4.0.2	May 2011	Addendum to 4.0.1
4.0.1	March 2011	Addendum to 4.0
4.0	May 2010	New major version
3.1a	March 2005	Addendum to 3.1
3.1	December 2004	Incorporated AGS-M
AGS-M	March 2002	Standalone document for monitoring
3	November 1999	New major version
07/94 (AGS2)	July 1994	Changes to Rules and Appendices
03/92 (AGS1)	March 1992	Original Issue

CONTENTS

1 INTRODUCTION

The AGS Format has been accepted by many in ground engineering as being appropriate for electronic data transfer and storage of ground investigation and monitoring data. Prior to this there was a proliferation of software systems and associated data formats that differed both in form and purpose even though much of their content was common. This was recognised by the Association of Geotechnical and Geoenvironmental Specialists (AGS) in 1991 and led to the setting up of a Working Party to establish an interchange format which allowed transfer of data between systems with minimal change to the systems themselves. The outcome of this work was embodied in the First Edition of this document published in 1992. The Second and Third Editions, published in 1994 and 1999 respectively, contained a series of updates and developments reflecting the ongoing needs of the industry.

The producers of geotechnical and geoenvironmental data have adopted systems for the efficient preparation and presentation of reports in printed format and the receivers for its analysis. Clearly, the transfer of data by electronic means to the receiver's systems, without the need for a printed interface, helps to minimise costs, time and the potential for error. It also encourages more and better use of the data. However, much remains to be done to encourage the use of data in the electronic format and the ongoing development of the AGS Format seeks to encourage its use not only in ground investigation but also in the design, bidding and construction phases of projects.

The capability of a geotechnical and geoenvironmental data system to accept or produce AGS Format data allows the data system operator to continue to use their own individual and bespoke processes and working methods, such as familiar data capture or processing forms, without compromising the ability to exchange data with clients, partners or suppliers. This aids the implementation and continual improvement of quality assurance procedures within data producers and receivers. Storage and access to the data is rendered far more efficient and the format also facilitates the establishment of data archives by producers, receivers and national bodies.

This document describes an update of the AGS Format and continues the trend of updating the Format in response to industry requirements. The Data Dictionary has been updated to extend the range of data that can be transferred and reflect the requirements of the implementation of Eurocodes, accreditation and quality assurance.

Additional guidance is available from the AGS website.

1.1 Terms and Definitions

For the purposes of this Document the following terms and definitions apply.

Note that the word Data can be both singular and plural (think “sheep”)
Note that where the word geotechnical is used throughout this document, it is intended to encompass both geotechnical and geoenvironmental aspects

Data Dictionary

a set of information describing the contents, format, and structure of a data and the relationship between its elements, used to control access to and manipulation of the data.

Data File

a digital file containing ground investigation data

AGS Format

combination of data dictionary, file transfer format and rules as described in this document

Data Field

the heading and data variable

Data Field Heading

the heading in a data group

Data Group

a collection of related data items as defined in the data dictionary

Data Item

The heading, the unit, the data type and the data variable

Data Variable

the value inside a data field (or the quotes)

Keyset

The data items in a data group with the status marked as key (*) together

Organization

company, institution, government department and/or project team

1.2 Downloading This Publication

The document may be downloaded in PDF format from the AGS website free of charge.

1.3 AGS Format Registration

Organizations that submit or receive the AGS Format to exchange data electronically shall register with the AGS. Registration forms and information on current charges can be found on the website.

A list of Registered Organizations is on the AGS website at www.agsdataformat.com.

1.4 Registration Benefits

Registered users of the format will:

- Be authorised to transfer and receive AGS Data
- Be able to use the AGS Format Logo on their reports (see below).
- Be able to download example AGS files and abbreviation lists from the AGS website.

- Be included on the list of registered users.
- Make suggestions for future editions of the AGS Format or additional abbreviations.
- Be able to submit new posts onto the discussion forum

The AGS wishes to encourage Data Providers to declare on their reports when the data contained within the report is also available in AGS Format. To this end the AGS provides the following AGS Format logo to Registered Users of the Format.

The logo is only to be used by Registered Organizations of the AGS Format and should be included on the relevant report sheets.

The logo represents a 3½" floppy disc in homage to the origin of the AGS Format.

2 SCOPE

The AGS Format enables the electronic transfer of data recorded during ground investigations and ground engineering construction related activities. Typically, the data transmitted is that presented on forms such as exploratory hole records (e.g. boreholes and trial pits), in situ/field test datasheets, monitoring and laboratory test results.

The transmission of report texts (introductory text, summaries, discussions and interpretations) is not within this scope. The transfer is limited to data without typographic or rendering information, such as font, underline or paragraph format. Typically these documents would be transmitted in standard file formats such as Adobe Portable Document Format (PDF) that retain the published format of the documents. Similarly, the format of the transmission of drawings and photographs, if required, is covered by other standards. AGS4, however, includes the transmittal of these documents within an AGS submission using the FILE Group, such that reports, drawings and photographs may also be transferred in a coordinated manner by electronic means.

3 DATA DICTIONARY

The data dictionary is a structured list of all the data items that may be recorded during geotechnical and geoenvironmental investigations (including testing, construction and monitoring). The data dictionary is maintained by the AGS Data Management Working Group. The data items are those which are required to be reported by the standards and specifications used for carrying out the work; for example BS 5930, BS 1377, BS EN ISO 17892 etc. The data dictionary organises these items into Groups, each Group is for a specific part of the investigation such as the location of an investigation point, the description of excavation of the borehole, a laboratory test or an in situ test.

Each Group contains a list of data Headings which contain the individual data variables and data items (such as data types, units and descriptions).

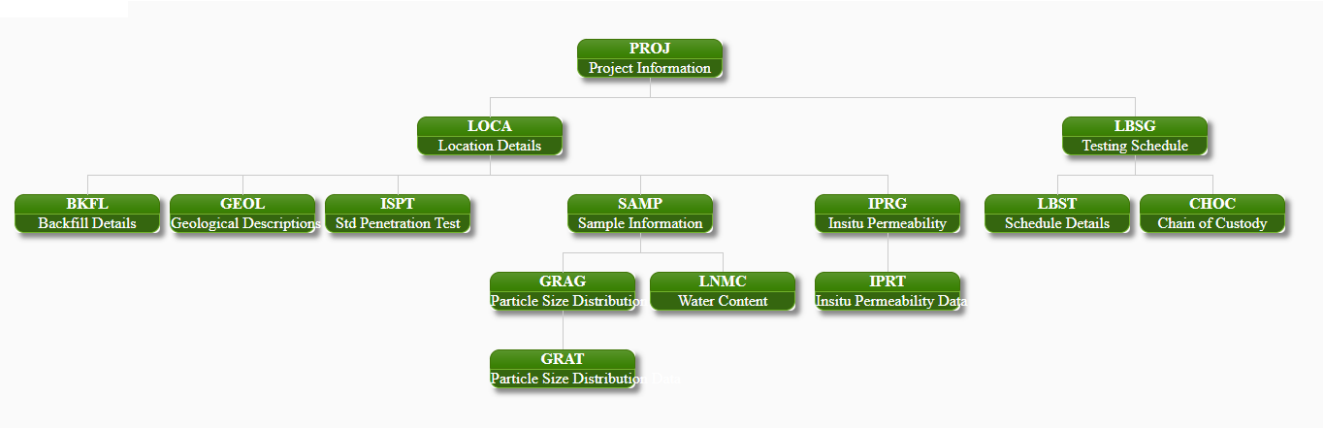
For a specific project it may be practical to extract a limited set of Groups if many of the other Groups are not needed.

Additions to the data dictionary for the project must be clearly included in the specification and agreed between data providers and receivers at the outset of the project.

3.1 Data Format Schema (Group Hierarchy)

AGS4 Groups are organised in a hierarchy. At the top of the hierarchy is the PROJ Group, with the majority of other Groups below this.

One of the Groups immediately below PROJ is Location Details (LOCA). All of the in situ testing data lies directly below LOCA; for example SPT results in the ISPT Group. LOCA is termed the 'parent' Group of ISPT and ISPT is termed a 'child' Group of LOCA. The parent group of all the laboratory testing is sample data (SAMP).



A Group has only one parent defined in the Hierarchy, but there can be many child Groups below each parent. Each child Group is linked to its parent Group by the Key Fields.

The table in section 3.6 defines the Group hierarchy by indicating the parent for each Group. The Key Fields that create the link between these Groups are indicated in the Data Dictionary.

There are ten Groups that are not part of this hierarchy and relate to the data file submission and description. The PROJ, TRAN, ABBR, TYPE, DICT, FILE, UNIT, LBSG, PREM and STND Groups each have a general purpose to describe the content of the data file as follows:

- The PROJ, TRAN, ABBR, TYPE and UNIT Groups shall always be included in an AGS file as they define the project, the submission details and the abbreviations, data types and units used within the data file (see rules 13,14,15,16,17).
- The DICT Group shall be included if any user defined Groups or Headings are present. (Rule 18)
- The STND Group should be used to list the various standards and specifications that define the methods by which the data has been collected.
- The LBSG Group should be used to transfer laboratory test scheduling.
- The PREM Group should be used to give time-related remarks that refer to the project as a whole and not to any specific location or test.

- The FILE Group should be used if any associated files (non-AGS Format files) are included in the submission (Rule 20).

3.2 Heading Status

Each Heading has a defined status as listed below:

Status Indicator	Description	Example / Notes
*	KEY All KEY Headings shall be included in the group. The combination of data recorded within the KEY Headings of each group shall be unique.	Rule 10a refers.
R	REQUIRED Data under these headings shall not be null.	Rule 10b & Rule 12 refers. The AGS Edition Reference shall be included under the TRAN_AGS Heading to associate the file to the document that contains the specification of Headings.
	OTHER The presence of these Headings and data under these Headings are dictated by the scope of the project specification.	

3.3 Data Types

The TYPE and UNIT selected for a heading are inter-linked.

The data types for each heading are provided in the Data Dictionary. The types in the data dictionary should be used unless otherwise agreed between data provider and receiver in accordance with a project specification.

Type	Description	Example / Notes
ID	Unique Identifier	An ID is a unique identifier used across the project. The ID shall be unique in the parent group but may be repeated in child groups i.e. SAMP (parent) vs ELRG (child), LOCA (parent) vs SAMP (child).
PA	Text listed in ABBR Group	Abbreviations listed in ABBR group. Rule 16 refers. The list of standard abbreviations and descriptions are presented on the AGS website and shall not be redefined. Other abbreviations may be defined as required within a project, but shall not match/impersonate existing standard abbreviations e.g. “CP” for ‘Cable percussion’ in LOCA_TYPE shall not be given a non-standard abbreviation defined as “CH” for ‘Cable

Type	Description	Example / Notes
		hole'; likewise "SCP" (Static cone penetrometer) shall not be replaced by a non-standard abbreviation of "CPT" (Cone penetration test). Multiple abbreviations can be used in a data VARIABLE. Where this occurs, abbreviations are joined using the concatenation character defined in TRAN_RCON (a "+" character by default).
PT	Text listed in TYPE Group	Abbreviations listed in TYPE group. Rule 17 refers.
PU	Text listed in UNIT Group	Abbreviations listed in UNIT group. Rule 15 refers. The list of standard units and descriptions are presented on the AGS website and shall not be redefined. This list is case sensitive.
X	Text	Abbreviations used in text data shall be listed in the ABBR group. Rule 16 refers.
XN	Text / numeric	There are some measured parameters that are typically numeric but can have a valid result that is text; examples include plastic limit (34 or NP) and depth of water in a borehole (2.34 or dry). Abbreviations used in text data shall be listed in the ABBR group. Rule 16 refers.
T	Elapsed Time	e.g. hh:mm:ss
DT	Date time in international format	yyyy-mm-ddThh:mm:ss.sssZ(+hh:mm) or yyyy-mm-dd or hh:mm:ss or yyyy This format may be used in full or part based on user requirements
MC	British Standard BS1377 : Part 2 reported moisture content	*This data type is included for legacy reasons and not used in AGS 4.1*
*n*DP	Value with required number of decimal places	e.g. 2DP = 2 decimal places = 2.34
*n*SF	Value with required number of significant figures	e.g. 2SF = 2 significant figures = 1.2, 10
*n*SCI	Scientific Notation with required number of decimal places	e.g. 73100 as 2SCI = 7.31E4; 73100 as 1SCI = 7.3E4

Type	Description	Example / Notes
U	Value with a variable format	This is used for fields that contain values with differing accuracy; e.g. AGS 4.1 = ELRG_RVAL (AGS 4.0 = ERES_RVAL).
DMS	Degrees:Minutes:Seconds	e.g. 51:28:52.498
YN	Yes or No	Data in the file will be either a *Y* or *N* or *Null* (Rule 12) e.g. Y
RL	Record Link	Rule 11 refers. Text in specified format that refers to one or more records in other Groups by Key headings.

3.4 Units of Measurement

The units for each heading are provided in the Data Dictionary. The units should be in accordance with the specifications and standards used in the UK. The units in the data dictionary should be used unless otherwise agreed between data provider and receiver in accordance with a project specification.

3.5 Heading Examples

Typical examples are given against most of the data Headings to indicate the type of information that might be expected. They are intended to be representative but might not be mutually compatible.

3.6 Groups and Headings

Group Name	Contents	Notes	Parent Group
PROJ	Project Information	Required in all files (Rule 13)	-
ABBR	Abbreviation Definitions	Required in all files (Rule 16)	-
DICT	User Defined Groups and Headings	Required in all files which include user defined groups and/or headings (Rule 18)	-
FILE	Associated Files	Required in file if FILE_FSET data provided in any group (Rule 19)	-
TRAN	Data File Transmission Information / Data Status	Required in all files (Rule 14)	-
TYPE	Definition of Data Types	Required in all files (Rule 17)	-
UNIT	Definition of Units	Required in all files (Rule 15)	-
AAVT	Aggregate Abrasion Tests		SAMP
ACVT	Aggregate Crushing Value Tests		SAMP
AELO	Aggregate Elongation Index Tests		SAMP
AFLK	Aggregate Flakiness Tests		SAMP
AIVT	Aggregate Impact Value Tests		SAMP
ALOS	Los Angeles Abrasion Tests		SAMP

Group Name	Contents	Notes	Parent Group
APSV	Aggregate Polished Stone Tests		SAMP
ARTW	Aggregate Determination of the Resistance to Wear (micro-Deval)		SAMP
ASDI	Slake Durability Index Tests		SAMP
ASNS	Aggregate Soundness Tests		SAMP
AWAD	Aggregate Water Absorption Tests		SAMP
BKFL	Exploratory Hole Backfill Details		LOCA
CBRG	California Bearing Ratio Tests – General		SAMP
CBRT	California Bearing Ratio Tests - Data		CBRG
CDIA	Casing Diameter by Depth		LOCA
CHIS	Chiselling Details		LOCA
CHOC	Chain of Custody Information		SAMP
CMPG	Compaction Tests - General		SAMP
CMPT	Compaction Tests - Data		CMPG
CONG	Consolidation Tests - General		SAMP
CONS	Consolidation Tests - Data		CONG
CORE	Coring Information		LOCA
CTRC	Cyclic Triaxial Tests - Consolidation		CTRG
CTRD	Cyclic Triaxial Tests - Data		CTRP
CTRG	Cyclic Triaxial Test - General		SAMP
CTRP	Cyclic Triaxial Test - Derived Parameters		CTRC
CTRS	Cyclic Triaxial Tests - Saturation		CTRG
DCPG	Dynamic Cone Penetrometer Tests – General		LOCA
DCPT	Dynamic Cone Penetrometer Tests – Data		DCPG
DETL	Stratum Detail Descriptions		LOCA
DISC	Discontinuity Data		LOCA
DLOG	Driller Geological Description		LOCA
DOBS	Drilling/Advancement Observations & Parameters		LOCA
DPRG	Dynamic Probe Tests - General		LOCA
DPRB	Dynamic Probe Tests - Data		DPRG
DREM	Depth Related Remarks		LOCA
ECTN	Sample Container Details		SAMP
ELRG	Environmental Laboratory Reporting		SAMP
~~ERES~~	~~Environmental Contaminant Testing~~	This group has been deprecated, see ELRG	~~SAMP~~
ESCG	Effective Stress Consolidation Tests – General		SAMP
ESCT	Effective Stress Consolidation Tests - Data		ESCG

Group Name	Contents	Notes	Parent Group
FGHG	Field Geohydraulic Testing - General		LOCA
FGHI	Field Geohydraulic Testing - Instrumentation Details		FGHG
FGHS	Field Geohydraulic Testing - Test Results (per stage)		FGHG
FGHT	Field Geohydraulic Testing - Test Results		FGHI
FLSH	Drilling Flush Details		LOCA
FRAC	Fracture Spacing		LOCA
FRST	Frost Susceptibility Tests		SAMP
GCHM	Geotechnical Chemistry Testing	This group is reserved for soil / water chemistry testing associated with geotechnical design assessments. Environmental contamination testing should be recorded in Group ~~ERES~~ ELRG	SAMP
GEOL	Field Geological Descriptions		LOCA
GRAG	Particle Size Distribution Analysis - General		SAMP
GRAT	Particle Size Distribution Analysis - Data		GRAG
HDIA	Hole Diameter by Depth		LOCA
HDPH	Depth Related Exploratory Hole Information		LOCA
HORN	Exploratory Hole Orientation and Inclination		LOCA
ICBR	In Situ California Bearing Ratio Tests		LOCA
IDEN	In Situ Density Tests		LOCA
IFID	On Site Volatile Headspace Testing Using Flame Ionisation Detector		LOCA
IPEN	In Situ Hand Penetrometer Tests		LOCA
IPID	On Site Volatile Headspace Testing by Photo Ionisation Detector		LOCA
~~IPRG~~	~~In Situ Permeability Tests - General~~	This group has been deprecated, see FGHG	~~LOCA~~
~~IPRT~~	~~In Situ Permeability Tests - Data~~	This group has been deprecated, see FGHT	~~IPRG~~
IRDX	In Situ Redox Tests		LOCA
IRES	In Situ Resistivity Tests		LOCA
ISAG	Soakaway Tests - General		LOCA
ISAT	Soakaway Tests - Data		ISAG
ISPT	Standard Penetration Test Results		LOCA
IVAN	In Situ Vane Tests		LOCA
LBSG	Testing Schedule		-
LBST	Testing Schedule Details		LBSG

Group Name	Contents	Notes	Parent Group
LDEN	Density Tests		SAMP
LDYN	Dynamic Testing		SAMP
LFCN	Laboratory Fall Cone Test		SAMP
LLIN	Linear Shrinkage Tests		SAMP
LLPL	Liquid and Plastic Limit Tests		SAMP
LNMC	Water/moisture Content Tests		SAMP
LOCA	Location Details		PROJ
LPDN	Particle Density Tests		SAMP
LPEN	Laboratory Hand Penetrometer Tests		SAMP
LRES	Laboratory Resistivity Tests		SAMP
LSLT	Shrinkage Limit Tests		SAMP
LSTG	Initial Consumption of Lime Tests - General		SAMP
LSTT	Initial Consumption of Lime Tests - Data		LSTG
LSWL	Swelling Index Testing		SAMP
LTCH	Laboratory Thermal Conductivity		SAMP
LUCT	Laboratory Unconfined Compression Test		SAMP
LVAN	Laboratory Vane Tests		SAMP
MCVG	MCV Tests - General		SAMP
MCVT	MCV Tests - Data		MCVG
MOND	Monitoring Readings		MONG
MONG	Monitoring Installations and Instruments		LOCA
PIPE	Monitoring Installation Pipe Work		LOCA
PLTG	Plate Loading Tests - General		LOCA
PLTT	Plate Loading Tests - Data		PLTG
PMTD	Pressuremeter Test Data		PMTG
PMTG	Pressuremeter Test Results - General		LOCA
PMTL	Pressuremeter Test Results - Individual Loops		PMTG
PREM	Project Specific Time Related Remarks		-
PTIM	Boring/Drilling Progress by Time		LOCA
PTST	Laboratory Permeability Tests		SAMP
PUMG	Pumping Tests - General		LOCA
PUMT	Pumping Tests - Data		PUMG
RCAG	Rock Abrasiveness Tests - General		SAMP
RCAT	Rock Abrasiveness Tests - Data		RCAG
RCCV	Chalk Crushing Value Tests		SAMP
RDEN	Rock Porosity and Density Tests		SAMP
RELD	Relative Density Tests		SAMP

Group Name	Contents	Notes	Parent Group
RESC	Resonant Column Test - Consolidation		RESG
RESD	Resonant Column Test - Data		RESG
RESG	Resonant Column Test – General		SAMP
RESP	Resonant Column Test - Derived Parameters		RESD
RESS	Resonant Column Test - Saturation		RESG
RPLT	Point Load Testing		SAMP
RSCH	Schmidt Rebound Hardness Tests		SAMP
RSHR	Shore Scleroscope Hardness Tests		SAMP
RTEN	Tensile Strength Testing		SAMP
RUCS	Rock Uniaxial Compressive Strength and Deformability Tests		SAMP
RWCO	Water Content of Rock Tests		SAMP
SAMP	Sample Information		LOCA
SCDG	Static Cone Dissipation Tests - General		SCPG
SCDT	Static Cone Dissipation Tests - Data		SCDG
SCPG	Static Cone Penetration Tests - General		LOCA
SCPP	Static Cone Penetration Tests - Derived Parameters		SCPG
SCPT	Static Cone Penetration Tests - Data		SCPG
SHBG	Shear Box Testing - General		SAMP
SHBT	Shear Box Testing - Data		SHBG
STND	Standards / Specifications		-
SUCT	Suction Tests		SAMP
TNPC	Ten Per Cent Fines		SAMP
TREG	Triaxial Tests - Effective Stress - General		SAMP
TRET	Triaxial Tests - Effective Stress - Data		TREG
TREM	Location Specific Time Related Remarks		LOCA
TRIG	Triaxial Tests - Total Stress - General		SAMP
TRIT	Triaxial Tests - Total Stress - Data		TRIG
WADD	Water Added Records		LOCA
WETH	Weathering		LOCA
WGPG	Wireline Geophysics - General		LOCA
WGPT	Wireline Geophysics - Readings		WGPG
WINS	Dynamic Sampling Run Details		LOCA
WSTG	Water Strike - General		LOCA
WSTD	Water Strike - Details		WSTG

Group Name: PROJ - Project Information					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*R	**PROJ_ID**		ID	Project identifier	121415
	PROJ_NAME		X	Project title	ACME Gas Works Redevelopment
	PROJ_LOC		X	Location of site	High Street, Anytown
	PROJ_CLNT		X	Client name	ACME Enterprises
	PROJ_CONT		X	Contractors name	ACME Drilling Ltd
	PROJ_ENG		X	Project Engineer	ACME Consulting
	PROJ_MEMO		X	General project comments	
	FILE_FSET		X	Associated file reference (e.g. project specification, site location drawings)	FS1

Group Notes

• PROJ is required in all AGS4 files (Rule 13).

• PROJ_ENG should contain the details of the consultant/designer for the project.

Group Name: ABBR - Abbreviation Definitions					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*R	**ABBR_HDNG**		X	Field heading in group	LOCA_TYPE
*R	**ABBR_CODE**		X	Abbreviation used	TP
R	**ABBR_DESC**		X	Description of abbreviation	Trial Pit
	ABBR_LIST		X	Source of abbreviation	AGS4
	ABBR_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. contract data specification)	FS1

Group Notes

• ABBR is required in all AGS4 data files and describes all abbreviations used in headings defined by the PA data type (Rule 16).

• The AGS Format website (www.agsdataformat.com) lists the standard abbreviations.

• Additional abbreviations, used in any heading in the file, must be defined in this group.

• ABBR_LIST details the list from which the ABBR_CODE originates. For standard AGS headings this value would be 'AGS4' to refer to the AGS website.

Group Name: DICT - User Defined Groups and Headings					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*R	**DICT_TYPE**		PA	Flag to indicate definition is a GROUP or HEADING (i.e. can be either of GROUP or HEADING)	HEADING
*R	**DICT_GRP**		X	Group name	NGRP
*	**DICT_HDNG**		X	Heading name (Note: This data is REQUIRED where DICT_TYPE="HEADING")	NGRP_HED1
	DICT_STAT		PA	Heading status KEY, REQUIRED or OTHER (Note: This data is REQUIRED where DICT_TYPE="HEADING")	OTHER
	DICT_DTYP		PT	Type of data and format (Note: This data is REQUIRED where DICT_TYPE="HEADING")	2DP
R	**DICT_DESC**		X	Description	New group heading 1
	DICT_UNIT		PU	Units (Note: This data is REQUIRED where DICT_TYPE="HEADING")	mg/kg
	DICT_EXMP		X	Example	20
	DICT_PGRP		X	Parent group name (Note: This data is REQUIRED where DICT_TYPE="GROUP")	LOCA
	DICT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS1

Group Rules

• If the DICT_TYPE is HEADING, there shall be data variables present for DICT_GRP, DICT_HDNG, DICT_STAT, DICT_UNIT, DICT_DTYP and DICT_DESC.

• If the DICT_TYPE is GROUP, there shall be data variables present for DICT_GRP and DICT_DESC and the DICT_HDNG, DICT_STAT, DICT_DTYP and DICT_UNIT headings shall contain NULL values.

• Data type for data field heading DICT_UNIT shall not be changed from PU.

Group Notes

• DICT is required in all AGS4 files where user defined groups and/or headings are specified (Rule 18).

• DICT_STAT defines the status of the heading. This shall contain the data 'KEY', 'REQUIRED', 'KEY+REQUIRED' or 'OTHER', where OTHER denotes the data field is neither key nor required (Rule 10).

• DICT_PGRP allows for inclusion of the parent group name when the DICT_TYPE is "GROUP". This permits data integrity checking where data files include user defined groups.

Group Name: FILE - Associated Files					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*R	**FILE_FSET**		X	File set reference	FS128
*R	**FILE_NAME**		X	File name	BH1_Core_West.JPG
	FILE_DESC		X	Description of content	BH1 Core photo box 8
	FILE_TYPE		PA	File type	JPG
	FILE_PROG		X	Parent program and version number	Irfanview v4.10
	FILE_DOCT		PA	Document type	PH
	FILE_DATE	yyyy-mm-ddThh:mm	DT	File date	2009-04-01T10:45
	FILE_REM		X	Comments on file	

Group Notes

• Rule 20 defines how associated files are to be included in AGS submissions.

Group Name: TRAN - Data File Transmission Information / Data Status					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*R	**TRAN_ISNO**		X	Issue sequence reference	1
R	**TRAN_DATE**	yyyy-mm-dd	DT	Date of production of data file	2009-04-01
R	**TRAN_PROD**		X	Data file producer	ACME Drilling Ltd
R	**TRAN_STAT**		X	Status of data within submission	Draft
	TRAN_DESC		X	Description of data transferred	Draft logs only
R	**TRAN_AGS**		X	AGS Edition Reference	4.1
R	**TRAN_RECV**		X	Data file recipient	ACME Consulting
	TRAN_DLIM		X	Record Link data type Delimiter	|
	TRAN_RCON		X	Concatenator	+
	TRAN_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. data file QA check records)	FS1

Group Notes

• TRAN is required in all AGS4 files (Rule 14).

• Delimiter and concatenator characters (TRAN_DLIM & TRAN_RCON) need to be defined if Record Link data or multiple concatenated abbreviations are included in the file. These characters cannot be used in IDs and abbreviations that are referred to in data key sets.

Group Name: TYPE - Definition of Data Types					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*R	**TYPE_TYPE**		X	Data type code	0DP
R	**TYPE_DESC**		X	Description	Numeric, zero decimal places
	FILE_FSET		X	Associated file reference	FS1

Group Notes

• TYPE is required in all AGS4 files (Rule 17).

• The AGS Data Transfer Format website (www.agsdataformat.com) lists the standard data type definitions.

Group Name: UNIT - Definition of Units					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*R	**UNIT_UNIT**		X	Unit	ohm m
R	**UNIT_DESC**		X	Description	ohm metres
	UNIT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS1

Group Notes

• UNIT is required in all AGS4 files (Rule 15) and defines all units used for data headings and within data records (e.g. GCHM, MOND and ELRG).

• The AGS Data Transfer Format website (www.agsdataformat.com) lists the standard unit definitions.

Group Name: AAVT - Aggregate Abrasion Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AAVT_AAV		2SF	Aggregate Abrasion Value	8.3
	AAVT_REM		X	Remarks	
	AAVT_METH		X	Test method	BS 812: Part 113: 1990

Group Name: AAVT - Aggregate Abrasion Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	AAVT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AAVT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AAVT_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: ACVT - Aggregate Crushing Value Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ACVT_ACV	%	0DP	Aggregate Crushing Value	17
	ACVT_FRAC		X	Size fraction from which test portion was obtained	10-14mm aggregate
	ACVT_REM		X	Remarks	
	ACVT_METH		X	Test method	BS 812: Part 110: 1990
	ACVT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ACVT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ACVT_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: AELO - Aggregate Elongation Index Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AELO_EI		0DP	Aggregate elongation index	9
	AELO_REM		X	Remarks	
	AELO_METH		X	Test method	
	AELO_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AELO_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AELO_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: AFLK - Aggregate Flakiness Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55

Group Name: AFLK - Aggregate Flakiness Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AFLK_FI	%	0DP	Aggregate flakiness index	9
	AFLK_MASS	kg	1DP	Mass of test portion	35.1
	AFLK_REM		X	Remarks	
	AFLK_METH		X	Test method	BS EN 933-3:2012
	AFLK_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AFLK_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AFLK_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: AIVT - Aggregate Impact Value Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AIVT_AIV1	%	2DP	Aggregate impact value test 1	15.01
	AIVT_AIV2	%	2DP	Aggregate impact value test 2	15.03
	AIVT_AIV	%	1DP	Mean aggregate impact value	15.0
	AIVT_FRAC		X	Size fraction from which test portion was obtained	50% between 8mm and 10mm, 25% between 10mm and 11.2mm, 25% between 11.2mm and 12.5mm

Group Name: AIVT - Aggregate Impact Value Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	AIVT_PDEN	Mg/m3	2DP	Particle density of size fraction between 8 mm and 12.5mm	2.53
	AIVT_REM		X	Remarks	
	AIVT_METH		X	Test method	BS EN 1097-2:202
	AIVT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AIVT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AIVT_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: ALOS - Los Angeles Abrasion Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ALOS_LOSA		0DP	Los Angeles coefficient	15
	ALOS_LOPW	%	0DP	Los Angeles percentage wear	10
	ALOS_LOWR		0DP	Los Angeles wear ratio	8
	ALOS_FRAC		X	Size fraction from which test portion was obtained	10-14mm with between 60% and 70% passing a 12.5mm test sieve.
	ALOS_CHAR		X	Ball load or charge grading	11 steel balls 45-49mm, total load 4800g
	ALOS_REM		X	Remarks	
	ALOS_METH		X	Test method	BS EN 1097-2:202
	ALOS_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc

Group Name: ALOS - Los Angeles Abrasion Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	ALOS_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ALOS_DEV		X	Deviation from the specified procedure	

Group Notes

• Headings are included for both BS1377 and ISRM test specifications.

Group Name: APSV - Aggregate Polished Stone Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	APSV_AAV		0DP	Aggregate polished stone value	67
	APSV_REM		X	Remarks	
	APSV_METH		X	Test method	BS 812-114:1989
	APSV_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	APSV_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	APSV_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: ARTW - Aggregate Determination of the Resistance to Wear (micro-Deval)					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ARTW_FRAC		X	Size fraction on which sample obtained	10 to 14mm aggregate grading a)
	ARTW_TYPE		PA	Type of test	WET
	ARTW_MD1		1DP	Micro-Deval coefficient for test specimen one	24.3
	ARTW_MD2		1DP	Micro-Deval coefficient for test specimen two	24.3
	ARTW_MDE		0DP	Mean micro-Deval value (dry)	24
	ARTW_MDS		0DP	Mean micro-Deval value (wet)	24
	ARTW_DATE	yyyy-mm-dd	DT	Date control 2 polished stone value first run	2003-02-10
	ARTW_REM		X	Remarks	
	ARTW_METH		X	Test method	BS EN 1097-1:2011
	ARTW_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ARTW_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ARTW_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: ASDI - Slake Durability Index Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ASDI_SDI1	%	1DP	First cycle slake durability index (if ASDI_SDI1 or ASDI_SDI2 is between 0% and 10%)	6.1
	ASDI_SDI2	%	1DP	Second cycle slake durability index	8.6
	ASDI_SOLN		X	Nature and temperature of slaking fluid	Tap water at 20 DegC
	ASDI_INDR		X	Appearance of fragments retained in the drum	All fragments showing partial disintegration
	ASDI_PADR		X	Appearance of fragments passing through the drum	Fine particles in suspension with thin layer of larger particles in base of trough.
	ASDI_REM		X	Remarks	
	ASDI_METH		X	Test method	ISRM: Suggested method for determining slake durability index.
	ASDI_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ASDI_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ASDI_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: ASNS - Aggregate Soundness Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ASNS_SOUN	%	0DP	Aggregate soundness test	12
	ASNS_FRAC		X	Size fraction from which test portion was obtained	10-14mm aggregate
	ASNS_REM		X	Remarks	
	ASNS_METH		X	Test method	BS 812-121:1989 - Magnesium Sulfate
	ASNS_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ASNS_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ASNS_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: AWAD - Aggregate Water Absorption Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone

Group Name: AWAD - Aggregate Water Absorption Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AWAD_WTAB	%	1DP	Aggregate water absorption	2.6
	AWAD_REM		X	Remarks	
	AWAD_METH		X	Test method	BS 812 - Gas jar method 10 mm aggregate
	AWAD_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AWAD_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AWAD_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: BKFL - Exploratory Hole Backfill Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**BKFL_TOP**	m	2DP	Depth to top of section	1.40
	BKFL_BASE	m	2DP	Depth to base of section	11.40
	BKFL_DESC		X	Backfill description	Arisings
	BKFL_LEG		PA	Backfill legend abbreviation	901
	BKFL_DATE	yyyy-mm-dd	DT	Date of completion of backfill	2004-04-01
	BKFL_REM		X	Backfill remarks including how it was placed	
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS20

Group Notes

• None

Group Name: CBRG - California Bearing Ratio Tests - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Stored at constant water/moisture content for 7 days, then soaked for 7 days, maintained at 20±2°C throughout
	CBRG_COND		PA	Sample condition	UNDISTURBED
	CBRG_NMC	%	X	Natural water/moisture content of specimen prior to test	16.4
	CBRG_200	%	0DP	Weight percent retained on 20mm sieve	10
	CBRG_STAB	%	2SF	Amount of stabiliser added	23
	CBRG_STYP		X	Type of stabiliser added	Cement
	CBRG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Specimen lifted during penetration
	CBRG_METH		X	Test method including remoulding	BS1377: Part 4: 1990 4.5kg compactive effort
	CBRG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	CBRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS16
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CBRG_DEV		X	Deviation from the specified procedure	

Group Notes

• Initial water/moisture content required for each stage of testing, heading added to CBRT group and removed from CBRG.

• New headings added to permit details of test method, laboratory and test accreditation to be included in data.

Group Name: CBRT - California Bearing Ratio Tests - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**CBRT_TESN**		X	Test reference	1
	CBRT_TOP	%	2SF	CBR at top	6.4
	CBRT_BASE	%	2SF	CBR at bottom	5.2
	CBRT_MCT	%	X	Water/moisture content at top after test	15.1
	CBRT_MCBT	%	X	Water/moisture content at bottom after test	14.2
	CBRT_IMC	%	X	Initial water/moisture content	21.3
	CBRT_BDEN	Mg/m3	2DP	Initial bulk density	1.84
	CBRT_DDEN	Mg/m3	2DP	Initial Dry density	1.60
	CBRT_SURC	kPa	0DP	Surcharge pressure applied	10
	CBRT_SKDT		X	Details of soaking	4 days in tap water
	CBRT_SWEL	mm	1DP	Amount of swell recorded during soaking (if applicable)	3.0
	CBRT_REM		X	Test specific remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS16

Group Notes

• CBRT_SWEL shall be used to report the amount of swelling recorded on the specimen in each test.

• CBRT_IMC allows the initial water/moisture content of the CBR test sample to be recorded which may differ from the after test water content especially if the sample is pre-soaked.

• CBRT_REM allows commentary for the addition of test specific remarks. For example, where CBR is tested at natural water/moisture content, natural water content +2% and natural water content -2% or to include details of whether curve correction was applied.

Group Name: CDIA - Casing Diameter by Depth					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**CDIA_DPTH**	m	2DP	Depth of base of casing recorded in CDIA_DIAM	18.00
*	**CDIA_DIAM**	mm	0DP	Casing diameter	200
	CDIA_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. casing cement records)	FS20

Group Notes

• CDIA is used to transfer details of casing in the completed hole.

Group Name: CHIS - Chiselling Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**CHIS_FROM**	m	2DP	Depth at start of chiselling	5.20
	CHIS_TO	m	2DP	Depth at end of chiselling	5.35
	CHIS_TIME	hh:mm	T	Time taken	00:30
	CHIS_STAR	yyyy-mm-ddThh:mm	DT	Start time	2004-04-01T09:00
	CHIS_TOOL		X	Chiselling tool used	Shell
	CHIS_REM		X	Notes on chiselling	Chiselling sandstone boulder
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS20

Group Notes

• CHIS is to be used to transfer details of chiselling carried out when using a cable percussion rig to advance a borehole.

Group Name: CHOC - Chain of Custody 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
*	**CHOC_REF**		X	Chain of custody reference	A1241/1
	CHOC_FROM		X	Samples despatched from	ACME Sampling Ltd
	CHOC_TO		X	Samples despatched to	ACME Laboratories plc
	CHOC_DDIS	yyyy-mm-dd	DT	Date dispatched	2009-09-20
	CHOC_BTCH		X	Batch reference	S234-1
	CHOC_REM		X	Remarks	
	CHOC_CONT		0DP	Number of sample containers	1
	FILE_FSET		X	Associated file reference (chain of custody sheets)	FS99

Group Notes

• The CHOC group is used to transfer chain of custody information relating to samples.

Group Name: CMPG - Compaction Tests - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**CMPG_TESN**		X	Test number	1
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Stored at constant water/moisture content for 7 days, then soaked for 7 days, maintained at 20±2°C throughout
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	CMPG_TYPE		PA	Compaction test type	2.5kg
	CMPG_MOLD		PA	Compaction mould type	1 litre
	CMPG_375	%	0DP	Weight percent of material retained on 37.5mm sieve	7
	CMPG_200	%	0DP	Weight percent of material retained on 20mm sieve	15
	CMPG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	CMPG_MAXD	Mg/m3	2DP	Maximum dry density	2.06
	CMPG_MCOP	%	2SF	Moisture content at maximum dry density (Optimum)	14
	CMPG_STAB	%	2SF	Amount of stabiliser added	23
	CMPG_STYP		X	Type of stabiliser added	Cement
	CMPG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Single sample used
	CMPG_METH		X	Test method	BS1377:Part 4:1990,cl 3.3
	CMPG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	CMPG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS23
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CMPG_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: CMPT - Compaction Tests - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**CMPG_TESN**		X	Test number	1
*	**CMPT_TESN**		X	Compaction point number	1
	CMPT_MC	%	X	Water/moisture content	7.8
	CMPT_DDEN	Mg/m3	3DP	Dry density at CMPT_MC moisture content	1.852
	CMPT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS23

Group Notes

• None

Group Name: CONG - Consolidation Tests - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Sample from base of U100 sample, axis vertical
	CONG_TYPE		PA	Type of consolidation test	OEDOMETER
	CONG_COND		PA	Sample condition	UNDISTURBED
	CONG_SDIA	mm	2DP	Test specimen diameter	75.15

Group Name: CONG - Consolidation Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	CONG_HIGT	mm	2DP	Test specimen height	19.25
	CONG_MCI	%	X	Initial water/moisture content	21.1
	CONG_MCF	%	X	Final water/moisture content	18.8
	CONG_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	CONG_DDEN	Mg/m3	2DP	Initial dry density	1.75
	CONG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	CONG_SATR	%	0DP	Initial degree of saturation	98
	CONG_SPRS	kPa	2SF	Swelling pressure	100
	CONG_SATH	%	1DP	Height change of specimen on saturation, or flooding as percentage of original height (BS1377 Settlement on saturation test)	1.1
	CONG_IVR		3DP	Initial voids ratio	0.800
	CONG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Swell test prior to standard Oedometer
	CONG_METH		X	Test method	K H Head
	CONG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	CONG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS9
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CONG_DEV		X	Deviations from the test method	5 increments carried out only.
	CONG_MCIS		X	Initial water/moisture content source	Specimen trimmings
	CONG_CORR		YN	Results corrected for equipment deformation	Y

Group Notes

• CONG_IVR shall be used to report the initial voids ratio at the start of testing.

Group Name: CONS - Consolidation Tests - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55

Group Name: CONS - Consolidation Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**CONS_INCN**		X	Oedometer stress increment	3
	CONS_IVR		3DP	Voids ratio at start of increment	0.800
	CONS_INCF	kPa	0DP	Stress at end of stress increment/decrement	400
	CONS_INCE		3DP	Voids ratio at end of stress increment	0.622
	CONS_INMV	m2/MN	2SF	Reported coefficient of volume compressibility over stress increment	0.32
	CONS_INSC		2SF	Coefficient of secondary compression over stress increment	0.12
	CONS_CVRT	m2/yr	2SF	Coefficient of consolidation over stress increment determined by the root time method	2.1
	CONS_CVLG	m2/yr	2SF	Coefficient of consolidation over stress increment determined by the log time method	4.1
	CONS_TEMP	DegC	1DP	Average temperature over stress increment	22.0
	CONS_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS9

Group Notes

• CONS_IVR description clarified to the voids ratio at the start of the increment rather than repeat the initial voids ratio on each record in the CONS group as listed in previous editions.

• CONS_TEMP - BS1377 and BS EN ISO 17892-5 requires laboratory temperature at which test was carried out, but since Cv is corrected to 20 DegC from the temperature over the stage, it has to be per stage (but may be same throughout).

• BS allows reporting of either CONS_CVRT or CONS_CVLG or both, the laboratory will populate these headings as appropriate.

Group Name: CTRC - Cyclic Triaxial Tests - Consolidation					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**CTRC_TESN**		X	Test / Stage Number	2
	CTRC_CELL	kPa	1DP	Final cell pressure	350.5
	CTRC_BPWP	kPa	1DP	Base porewater pressure	692.0
	CTRC_MPWP	kPa	1DP	Mid-height porewater pressure	692.0
	CTRC_MPB	%	2DP	Mid-height B value	99.12
	CTRC_BB	%	2DP	Base B value	99.10

Group Name: CTRC - Cyclic Triaxial Tests - Consolidation					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	CTRC_TYPE		PA	Type of consolidation	ISOTROPIC
	CTRC_BACF	kPa	1DP	Final back pressure	200.0
	CTRC_ELAP	hh:mm:ss	T	Duration of test/stage number	09:38:23
	CTRC_CHGT	mm	2DP	Specimen height at end of stage	36.98
	CTRC_DIAE	mm	2DP	Specimen diameter at end of stage	75.21
	CTRC_MCE	%	X	Water content at end of stage	21.1
	CTRC_BDE	Mg/m3	2DP	Bulk density at end of stage	2.01
	CTRC_DDE	Mg/m3	2DP	Dry density at end of stage	1.60
	CTRC_RDE	%	1DP	Relative density index of sand at end of stage	90.1
	CTRC_INCE		3DP	Voids ratio at end of stage	0.765
	CTRC_ASE	kPa	1DP	Effective axial stress at end of stage	200.1
	CTRC_RSE	kPa	1DP	Effective radial stress at end of stage	100.1
	CTRC_SSE	kPa	1DP	Shear stress at end of stage	100.1
	CTRC_DEVE	kPa	1DP	Deviatoric stress at end of stage	100.1
	CTRC_MNSE	kPa	1DP	Mean effective stress at end of stage	99.7
	CTRC_RTOE		2DP	Ratio of radial to axial effective stress at end of stage	2.12
	CTRC_EASE	%	3DP	External axial strain at end of stage	0.221
	CTRC_VLSE	%	3DP	Volumetric strain from measured volume change at end of stage	0.271
	CTRC_RDSE	%	3DP	Radial strain from measured volume change at end of stage	0.232
	CTRC_B	%	1DP	B value	99.1
	CTRC_BETS		X	Bender element test sequence	After anisotropic consolidation stage 2
	CTRC_BEAX		PA	Bender element axis of measurement	hv
	CTRC_BEDS	mm	2DP	Distance between bender elements	1.92
	CTRC_MAT	s	4DP	Measured arrival time of propagated wave	0.4943
	CTRC_MATM		X	Method of measuring arrival time of propagated wave	Peak to peak
	CTRC_SWV	m/s	0DP	Calculated shear wave velocity	395
	CTRC_SMGM	MPa	1DP	Shear modulus Gmax	295.3
	CTRC_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS10

Group Notes

• None

Group Name: CTRD - Cyclic Triaxial Tests - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**CTRC_TESN**		X	Test / Stage Number	2
*	**CTRP_CYC**		X	Cycle number	5
	CTRD_TIME	yyyy-mm-ddThh:mm:ss	DT	Date/time of reading	2017-10-02T00:20:32
	CTRD_COND		PA	Test conditions	DRAINED
	CTRD_SDIA	mm	2DP	Specimen diameter	36.51
	CTRD_HIGH	mm	2DP	Specimen height	73.55
	CTRD_CELL	kPa	1DP	Cell pressure	350.1
	CTRD_BPWP	kPa	1DP	Base porewater pressure	692.0
	CTRD_MPWP	kPa	1DP	Mid-plane porewater pressure	692.0
	CTRD_EAS	%	3DP	External axial strain	0.002
	CTRD_LAS1	%	3DP	Local axial strain 1	0.002
	CTRD_LAS2	%	3DP	Local axial strain 2	0.001
	CTRD_VOL	%	3DP	Volumetric strain	0.005
	CTRD_RAD	%	3DP	Radial strain	0.012
	CTRD_SHSN	%	3DP	Shear strain	0.543
	CTRD_SHST	kPa	1DP	Shear stress	98.2
	CTRD_DEV	kPa	1DP	Deviatoric stress	80.2
	CTRD_PSD	kPa	1DP	Principal stress difference	150.0
	CTRD_MEES	kPa	1DP	Mean effective stress	510.0
	CTRD_SECE	MPa	1DP	Secant Young's Modulus (Local)	619.4
	CTRD_TANE	MPa	1DP	Tangent Young's Modulus	619.4
	CTRD_FREQ	Hz	2SF	Loading frequency	0.31
	CTRD_CSTS	kPa	1DP	Cyclic amplitude	200.0
	CTRD_ACVS	kPa	1DP	Average cyclic axial stress	200.0
	CTRD_DAVS	%	3DP	Double amplitude axial strain	14.323
	CTRD_CESR		2DP	Compression/Extension stress ratio	0.02
	CTRD_EMPR	%	1DP	Excess mid-plane pore pressure ratio	5.0
	CTRD_EBPR	%	1DP	Excess base pore pressure ratio	9.0
	CTRD_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

Group Notes

• Assumes axial cycles in deviator stress (constant cell pressure, controlled axial load)

Group Name: CTRG - Cyclic Triaxial Test - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	CLAY
	SPEC_PREP		X	Specimen preparation technique used	Water pluviation
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CTRG_TYPE		PA	Type of test	CAUc/CIUc
	CTRG_MCI	%	X	Initial water/moisture content	21.3
	CTRG_MCF	%	X	Final water/moisture content	22.1
	CTRG_H2O		X	Description of type of water used for filter flushing, and salt content if relevant	Salt water 30g/L
	CTRG_SBP	kPa	1DP	Saturation back pressure	102.5
	CTRG_SATR	%	0DP	Initial degree of saturation after back pressure	98
	CTRG_IRD	%	1DP	Initial sample relative density	90.1
	CTRG_SDIA	mm	2DP	Initial specimen diameter	38.25
	CTRG_HIGT	mm	2DP	Initial height of specimen	76.51
	CTRG_TMSS	g	2DP	Total mass of installed specimen	102.53
	CTRG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	CTRG_MADD	Mg/m3	2DP	Maximum density of sand	1.89
	CTRG_MIDD	Mg/m3	2DP	Minimum density of sand	1.78
	CTRG_DDEN	Mg/m3	2DP	Initial dry density	1.84
	CTRG_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	CTRG_IVR		3DP	Initial voids ratio	0.987
	CTRG_SAT		X	Method of saturation	Back pressure, none
	CTRG_DURN	day	1DP	Test Duration	2.5
	CTRG_REM		X	Remarks	
	CTRG_METH		X	Test method	ASTM D5311/D5311M-13
	CTRG_DEV		X	Deviations from the test method	
	CTRG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc

Group Name: CTRG - Cyclic Triaxial Test - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	CTRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS9

Group Notes

• Total number of stages of test to include all components of consolidation (hold and swelling) stages, Bender element test stages, cyclic loading stages (one set of N cycles at a uniform frequency and amplitude is equivalent to one stage) and shearing stages (if any).

• There is no facility to capture non-uniform cycles at present

• Cyclic loading is assumed to be sinusoidal.

Group Name: CTRP - Cyclic Triaxial Test - Derived Parameters					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**CTRC_TESN**		X	Test / Stage Number	2
*	**CTRP_CYC**		0DP	Cycle number	2
	CTRP_CYCF		0DP	Cycle number of failure	29
	CTRP_PWPM	kPa	1DP	Maximum excess porewater pressure	100.1
	CTRP_MNPP	kPa	1DP	Minimum excess porewater pressure	95.1
	CTRP_MXSS	kPa	1DP	Maximum shear stress	125.2
	CTRP_MNSS	kPa	1DP	Minimum shear stress	110.2
	CTRP_AVSS	kPa	1DP	Mean shear stress	99.2
	CTRP_CSS	kPa	1DP	Cyclic shear stress ((Max-Min)/2)	117.2
	CTRP_ACVS	kPa	1DP	Average cyclic axial stress	200.1
	CTRP_ASF	%	3DP	Axial strain at failure	0.015
	CTRP_FPWP	kPa	1DP	Porewater pressure at failure	320.1
	CTRP_QMAX	kPa	1DP	Maximum deviatoric stress	232.2
	CTRP_QMIN	kPa	1DP	Minimum deviatoric stress	75.1
	CTRP_MNES	kPa	1DP	Mean effective stress at end of CTRD_CYC	81.2
	CTRP_EAMX	%	3DP	Maximum axial strain	0.258
	CTRP_EAMN	%	3DP	Minimum axial strain	0.258

Group Name: CTRP - Cyclic Triaxial Test - Derived Parameters					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	CTRP_FVR		3DP	Final voids ratio	0.783
	CTRP_QEMX	kPa	1DP	Deviatoric stress at maximum axial strain	195.1
	CTRP_QEMN	kPa	1DP	Deviatoric stress at minimum axial strain	55.2
	CTRP_ESEC	MPa	1DP	Secant modulus	452.2
	CTRP_DAMP		2DP	Damping ratio	7.31
	CTRP_MODE		X	Mode of failure	Brittle
	CTRP_DIPL	%	2DP	Percent Difference from Programmed Load	3.24
	CTRP_OBP		X	Observed Performance (Visual)	Uniform straining
	CTRP_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

Group Notes

• None

Group Name: CTRS - Cyclic Triaxial Test - Saturation					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**CTRS_TESN**		X	Test / Stage Number	2
	CTRS_CELL	kPa	1DP	Saturation cell pressure	200.1
	CTRS_BPWP	kPa	1DP	Saturation base porewater pressure	100.2
	CTRS_MPWP	kPa	1DP	Saturation mid-height porewater pressure	120.1
	CTRS_MPB		2DP	Saturation mid-height B value	0.95
	CTRS_BB		2DP	Saturation base B value	0.99
	CTRS_SAT		X	Saturation method	Back Pressure
	CTRS_FSAT	%	2DP	Final saturation	99.12
	CTRS_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

Group Notes

• None

Group Name: CORE - Coring Information					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**CORE_TOP**	m	2DP	Depth to top of core run	2.54
*	**CORE_BASE**	m	2DP	Depth to base of core run	3.54
	CORE_PREC	%	0DP	Percentage of core recovered in core run (TCR)	32
	CORE_SREC	%	0DP	Percentage of solid core recovered in core run (SCR)	23
	CORE_RQD	%	0DP	Rock Quality Designation for core run (RQD)	20
	CORE_DIAM	mm	0DP	Core diameter	75
	CORE_DURN	hh:mm	T	Time taken to drill core run	00:05
	CORE_REM		X	Remarks	Rods dropped 200mm at 3.10m
	FILE_FSET		X	Associated file reference (e.g. photographs of rock cores)	FS5

Group Notes

• CORE is used to transfer details of rotary coring in rock and soil materials.

• The data transferred for coring in rock will be more extensive than for soil coring; specifically the SCR and RQD are not determined for soil cores.

• CORE_DURN permits the inclusion of the time duration for the core run to be drilled if this is a specified additional measured parameter.

Group Name: DCPG - Dynamic Cone Penetrometer Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DCPG_DATE**	yyyy-mm-dd	DT	Test date	2003-03-20
*	**DCPG_TESN**		X	Test reference	1
*	**DCPG_DPTH**	m	2DP	Depth from surface to start of test	0.30
	DCPG_ZERO	mm	0DP	Zero reading	223
	DCPG_LREM		X	Details of surface and base layers removed prior to/during the test (if applicable)	Asphalt surface layer removed by coring to allow testing of sub-base layers
	DCPG_REM		X	Test remarks	Test terminated at 0.53m penetration due to significant lean away from vertical
	DCPG_ENV		X	Details of weather and environmental conditions during test	Sunny and warm
	DCPG_METH		X	Test method	DMRB CS 229

Group Name: DCPG - Dynamic Cone Penetrometer Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	DCPG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	DCPG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. field record sheets)	FS26

Group Notes

• DCPG and DCPT are used together to record dynamic cone penetrometer (DCP) tests where data is recorded as penetration per blow. If data is recorded as blows over an interval, data shall be recorded in DPRG and DPRB.

• DCPG_REM should be used to record test set up including surface type, surface condition, base type, thickness of base (if removed) mm (ref TRL Project PR/INT/277/04).

• It is suggested that if CBR values derived from DCP tests are to be transferred in the AGS data then these should be included in the ICBR group.

Group Name: DCPT - Dynamic Cone Penetrometer Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DCPG_DATE**	yyyy-mm-dd	DT	Test date	2003-03-20
*	**DCPG_TESN**		X	Test reference	1
*	**DCPG_DPTH**	m	2DP	Depth from surface to start of test	0.30
*	**DCPT_CBLO**		0DP	Cumulative blows	1
	DCPT_PEN	mm	0DP	Penetration at DCPT_CBLO	9
	DCPT_DEL	hh:mm	T	Delay before increment started	00:00
	DCPT_REM		X	Test reading remarks	

Group Notes

• None

Group Name: DETL - Stratum Detail Descriptions					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DETL_TOP**	m	2DP	Depth to top of detail description	3.46
*	**DETL_BASE**	m	2DP	Depth to base of detail description	3.76
	DETL_DESC		X	Detail description	Claystone

Group Name: DETL - Stratum Detail Descriptions					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	DETL_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. logging field sheets)	FS4

Group Notes

• DETL is used to include geological details to the geological description of a stratum typically included in the margins of a borehole log.

• A geological description in DETL_DESC should be considered as a supplement to the main stratum description given in GEOL_DESC of the GEOL Group. Detailed descriptions should be given a single depth (which is repeated in both the DETL_TOP and DETL_BASE headings), only if it has no significant thickness, or if it marks the top of a gradational change in the nature of the stratum. For example, "27.65m Marl parting" or "35.65m Becoming very sandy". If the change in the stratum is not gradational it is generally preferable to give depth ranges. For example, "6.50 to 8.70m Sandy", is generally preferable to "Sandy below 6.50m". The depth or depth range of the detailed feature may be repeated within the description. Since the detailed descriptions are a supplement to the main description, detailed description depth ranges shall not cross main stratum boundaries.

Group Name: DISC - Discontinuity Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DISC_TOP**	m	2DP	Depth to top in hole, or distance to start on traverse, of discontinuity zone, or discontinuity	10.26
*	**DISC_BASE**	m	2DP	Depth to base in hole, or distance to end on traverse, of discontinuity zone	12.67
*	**FRAC_SET**		X	Discontinuity set reference	J3
*	**DISC_NUMB**		X	Discontinuity reference	57
	DISC_TYPE		PA	Type of discontinuity	Joint
	DISC_DIP	deg	X	Dip of discontinuity	8
	DISC_DIR	deg	X	Dip direction of discontinuity	247
	DISC_RGH		X	Small scale roughness	Smooth
	DISC_PLAN		X	Medium scale roughness	Planar
	DISC_WAVE	m	1DP	Large scale roughness, wavelength	15.1
	DISC_AMP	m	1DP	Large scale roughness, amplitude	0.5
	DISC_JRC		0DP	Joint Roughness Coefficient	10
	DISC_APP		X	Surface appearance	Slightly polished
	DISC_APT	mm	XN	Discontinuity aperture measurement	2
	DISC_APOB		X	Discontinuity aperture observation	Infilled
	DISC_INFM		X	Infilling material	Soft clay
	DISC_TERM		PA	Discontinuity termination (lower, upper)	X
	DISC_PERS	m	1DP	Persistence measurement	10.5
	DISC_STR	MPa	0DP	Discontinuity wall strength	50
	DISC_WETH		X	Discontinuity wall weathering	Slightly weathered
	DISC_SEEP		X	Seepage rating	Small

Group Name: DISC - Discontinuity Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	DISC_FLOW	l/s	0DP	Water flow estimate	2
	DISC_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. logging field sheets)	FS24

Group Rules

• DISC_APT shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200

Group Notes

• DISC is used to record detailed discontinuity logging typically carried out in rock exposures and rock core.

• Discontinuity spacing data is recorded in the FRAC group.

• Changes have been made to bring the Group in line with BS EN ISO 14689. References to ISRM have been removed as BS EN ISO 14689 is compatible with previous standards. Terminology has been amended to reflect current requirements.

• DISC_DIP and DISC_DIR data type changed to X but care should be taken to ensure a consistent convention is used throughout the AGS file. Where possible one value should be reported but if a range is required the presence of excess spaces and inconsistent separators is discouraged e.g. “150-160” not “150 – 160” or “150 to 160”

REPORTING DISCONTINUITY LOGGING DATA

Discontinuity logging may be carried out as part of a scanline survey of a rock face, or as a detailed fracture log of borehole core.

a) The logging may take one of three forms, the first two being the commonest:

• The recording of the nature of individual discontinuities. All discontinuity descriptions are given in the DISC Group. The FRAC Group shall not be used. The spacing between individual discontinuities may be assessed from their depths.

• The recording of the typical nature of sets of discontinuities. The typical description for a discontinuity set is given in the DISC Group and the typical spacing is given in the FRAC Group. Individual discontinuities are not described.

• The recording of the nature of individual discontinuities, with each discontinuity assigned to a discontinuity set. The individual discontinuity descriptions are given in the DISC Group and the typical spacing of a discontinuity set is given in the FRAC Group.

b) If individual discontinuities have been logged along a scanline or in a borehole, then the reporting procedure is as follows:

• The nature of the individual discontinuities is recorded in the DISC Group.

• For scanline logging, the location of each discontinuity is given in DISC_TOP as a distance from the start of the traverse along a scanline. The DISC_BASE should be completed to allow for checks against the discontinuity dip.

• For borehole cores, the location of each discontinuity is given as a depth in either DISC_TOP for horizontal to sub horizontal discontinuities or DISC_TOP and DISC_BASE for vertical to inclined discontinuities.

• Each discontinuity is numbered sequentially in DISC_NUMB from the top of the borehole, or from the start of the traverse.

• If each discontinuity has been assigned to a discontinuity set, then the set reference number should be given in FRAC_SET (see c below). The use of FRAC_SET is optional when individual discontinuities are logged.

• The orientation and nature of each discontinuity is reported using the remaining fields in DISC.

• For borehole logs the surface nature of the discontinuity is described using a combination of DISC_RGH, DISC_PLAN, DISC_JRC, DISC_APP, DISC_STR and DISC_WETH. It is generally not reliable to measure the aperture of a discontinuity in borehole core as the effect of drilling disturbance is unknown. However, the thickness of any discontinuity infill should be given in DISC_APT, and the nature of the infill given in DISC_INFM. Discontinuity dip can be given in DISC_DIP for vertical boreholes, and inclined boreholes with orientated core. Discontinuity dip direction can only be given in DISC_DIR if the core is orientated. In an inclined borehole with unorientated core only relative discontinuity dip can be given with respect to the normal to the core axis.

• For scanline logs all the above details of discontinuity orientation and nature can be given, together with the large scale waviness, true discontinuity aperture, discontinuity termination (using the abbreviations defined on the AGS website), and water seepage observations.

• The format of the DISC Group is applicable to most descriptive schemes, other than ISRM (1978)) and/or BS EN ISO 14689-1. Alternative schemes may be used on agreement between the Provider and Receiver.

c) If sets or zones of discontinuities have been logged along a scanline or in a borehole, then the reporting procedure is as follows:

• The discontinuity sets or zones are recorded in a combination of the DISC and FRAC Groups. The DISC Group is used to record either the typical orientation and nature of each set or zone of discontinuities, or the individual discontinuities. The FRAC Group is used to record the spacing of the discontinuities in each set or zone.

• The start and end of each set or zone of discontinuities of similar nature is given in DISC_TOP and DISC_BASE, either as depth in a borehole, or as distance from the start of the traverse along a scanline. The start and end of each set or zone of discontinuities with a similar spacing is given in FRAC_FROM and FRAC_TO. Normally the "nature" and "spacing" zones will coincide, and, therefore, DISC_TOP and DISC_BASE will be the same as FRAC_FROM and FRAC_TO.

• DISC_NUMB data variable is null (Rule 12) when logging discontinuity sets or zones.

• Each discontinuity set or zone must be given a unique set reference number in FRAC_SET. For example, joint sets may be numbered J1, J2, J3 etc, bedding discontinuities as B1, B2 etc. The use of FRAC_SET provides the link between the DISC and FRAC Groups.

• The typical orientation and nature of each discontinuity set or zone is reported using the remaining fields in DISC.

The spacing of the discontinuities within each discontinuity set or zone is reported in the FRAC Group, giving the minimum, average (typical), and maximum spacing in mm of the fractures in that set or zone, using the FRAC_IMIN, FRAC_IAVE and FRAC_IMAX fields. Alternatively, the average (typical) number of fractures per metre can be given in FRAC_FI.

Group Name: DLOG - Driller Geological Description					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DLOG_TOP**	m	2DP	Depth to top of drillers stratum description	11.25
*	**DLOG_BASE**	m	2DP	Depth to base of drillers stratum description	12.25
	DLOG_DESC		X	Drillers description of stratum	Dense yellow SAND
	DLOG_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. sampling field sheets)	FS67

Group Notes

• The DLOG group is to record initial stratum descriptions as recorded by the driller on the driller's logs. Engineers descriptions to be included in the GEOL group.

Group Name: DOBS - Drilling/Advancement Observations & Parameters					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DOBS_TOP**	m	2DP	Depth to top of reported section	6.20
*	**DOBS_BASE**	m	2DP	Depth to base of reported section	7.20
*	**DOBS_SET**		X	Readings set reference	A
	DOBS_DURN	hh:mm:ss	T	Duration to advance reported section	00:05:00
	DOBS_STIM	yyyy-mm-ddThh:mm:ss	DT	Date and time of start of reported section	2010-12-02T14:05:15
	DOBS_ETIM	yyyy-mm-ddThh:mm:ss	DT	Date and time at end of reported section	2010-12-02T14:10:15
	DOBS_DHRT	Nm	1DP	Drill head rotational torque	250.5
	DOBS_DHRS	rpm	0DP	Drill head rotational speed	76
	DOBS_PENR	m/hr	1DP	Penetration rate	2.0

Group Name: DOBS - Drilling/Advancement Observations & Parameters					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	DOBS_HAMM		YN	Hammering used during section	N
	DOBS_THRP	bar	1DP	Pressure of downthrust system	30.0
	DOBS_RESP	bar	1DP	Pressure of restraining (holdback) system	25.0
	DOBS_TORP	bar	1DP	Torque pressure	20.0
	DOBS_TORQ	Nm	1DP	Torque applied to top of drill rods	250.0
	DOBS_THST	kN	1DP	Downward thrust on bit	5.0
	DOBS_REST	kN	1DP	Restraining (holdback) force	5.0
	DOBS_HAMP	bar	1DP	Supply pressure to downhole hammer	80.0
	DOBS_SPEN	MJ/m3	1DP	Specific energy	500.0
	DOBS_FMPO	kPa	1DP	Flushing medium pressure at the output of the pump over flush zone	15.3
	DOBS_FMCR	l/min	1DP	Flushing medium circulation rate (input) over flush zone	1.2
	DOBS_FMRR	l/min	1DP	Flushing medium recovery rate over flush zone	1.1
	DOBS_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. drilling journals or log files)	FS36

Group Notes

• DOBS is to be used to record information on hole advancement and drilling parameters, for example open hole rotary drilling information.

• DOBS records are data relating to the drilling parameters over a depth range. Where instrumentation on drilling rigs provides point readings of these parameters, this data should either be collated to summarise parameters over appropriate depth ranges, or reported with the start and end of each depth range to represent a point reading.

• DOBS_SET allows for multiple readings to be included in the group in circumstances for example where a hole depth section is re-drilled.

• FLSH shall be used to record other flushing related information.

• It is suggested that DOBS can be used to transfer information recorded from instrumented drilling rigs. Additional fields may be required to fully transfer the information.

Group Name: DPRG - Dynamic Probe Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DPRG_TESN**		X	Test reference	1
	DPRG_DATE	yyyy-mm-dd	DT	Test date	2003-03-20
	DPRG_TYPE		PA	Dynamic probe type	DPL
	DPRG_METH		X	Test method	BS EN ISO 22476-2
	DPRG_MASS	kg	1DP	Hammer mass	50.0
	DPRG_DROP	mm	0DP	Standard drop	500
	DPRG_CONE	mm	1DP	Cone base diameter	43.0
	DPRG_ROD	mm	0DP	Rod diameter	35
	DPRG_TANV		X	Type of anvil	
	DPRG_DAMP		X	Type of anvil damper	None
	DPRG_TIP	m	2DP	Depth of cone if left in ground	8.00
	DPRG_REM		X	General remarks	Hole backfilled on completion
	DPRG_ANG	deg	0DP	Cone angle	90
	DPRG_RMSS	kg/m	1DP	Rod mass	9.0
	DPRG_PARF		X	Precautions against rod friction	
	DPRG_PDIU		X	Pre-drilling if used	
	DPRG_BCF		X	Blow count frequency	
	DPRG_GW	m	2DP	Groundwater level	1.00
	DPRG_REET		X	Reasons for early end of test	
	DPRG_ENV		X	Details of weather and environmental conditions during test	Heavy rain
	DPRG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	DPRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS25

Group Notes

• The cone angle and rod mass (per unit length) have been included to provide additional test data for defining non-standard equipment such as the Mackintosh Probe.

Group Name: DPRB - Dynamic Probe Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DPRG_TESN**		X	Test reference	1
*	**DPRB_DPTH**	m	2DP	Depth to start of dynamic probe increment	2.50
	DPRB_BLOW		0DP	Dynamic probe blows for increment DPRB_INC	7
	DPRB_CBLW		0DP	Cumulative blows for test	35
	DPRB_TORQ	Nm	0DP	Maximum torque required to rotate rods	75
	DPRB_DEL	hh:mm	T	Delay before increment started	00:00
	DPRB_INC	mm	0DP	Dynamic probe increment	100
	DPRB_REM		X	Notes on events during increment	
	FILE_FSET		X	Associated file reference	FS25

Group Notes

• None

Group Name: DREM - Depth Related Remarks					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**DREM_TOP**	m	2DP	Depth of remark (DREM_REM)	12.50
*	**DREM_BASE**	m	2DP	Base depth	13.80
	DREM_REM		X	Depth related remark	Driving boulder ahead of casing
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS5

Group Notes

• DREM may be used for all remarks and notes that are related to a specific depth in the borehole or trial pit, that are not geological. Typically this includes drillers comments usually found on the boring or drilling journal.

• DREM is used for reporting incidents during drilling (such as "Fishing for broken U100"), drilling records that don't readily fit in any other groups (such as "Pushing boulder ahead of casing"), observations that are not strictly geological (such as "Strong petrol smell").

Group Name: ECTN - Sample Container Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**SAMP_TOP**	m	2DP	Depth to top of sample	11.25
*	**SAMP_REF**		X	Sample reference	32
*	**SAMP_TYPE**		PA	Sample type	ES
*	**SAMP_ID**		ID	Sample unique identifier	ABC121418010
*R	**ECTN_ID**		ID	Container unique identifier	AA121589465
	ECTN_TYPE		X	Sample container type	AMBER_GLASS
	ECTN_REM		X	Sample container remarks	
	FILE_FSET		X	Associated file reference (e.g. sampling field sheets)	FS67

Group Rules

• When the sample is contained in a single container the sample shall not be reported in this group.

Group Notes

• The ECTN group is used to record details of multiple containers forming part of a sample; e.g. glass jars, vials, tubs etc taken for contamination testing.

• SAMP_ID does not have to be used and can be NULL (Rule 12); the remaining keyset data field headings can be used on their own.

Group Name: ELRG - Environmental Laboratory Reporting					
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	ES
*	**SAMP_ID**		ID	Sample unique identifier	ABC121415010
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*R	**ELRG_CODE**		PA	Determinand code	P04100
*	**ELRG_METH**		X	Test method	In house method no 231241
*	**ELRG_MATX**		PA	Laboratory test matrix	LIQUID
*	**ELRG_RTYP**		PA	Run type (initial or reanalysis)	INITIAL
*	**ELRG_TADE**		PA	Test additional descriptor	CEN_2_1
*	**ELRG_TICN**		X	Tentatively identified compound (TIC)	1,2,3,dibrom etc
*R	**ELRG_RUNI**		PU	Result unit	mg/l
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ELRG_LSID		X	Laboratory sample ID	ABC123-A
	ELRG_RTCD		PA	Result type	TIC
	ELRG_IQLF		X	Interpreted qualifiers	
	ELRG_LQLF		X	Laboratory qualifiers	<
	ELRG_RVAL		U	Result value	0.25
	ELRG_RTXT		X	Reported result	<2.3
	ELRG_NAME		X	Determinand name	Boron
	ELRG_TNAM		X	Laboratory analytical name	Boron
	ELRG_DCAT		X	Determinand category	Metals, VOC, Pesticides
	ELRG_TESN		X	Test reference	
	ELRG_FDEV		YN	Flagged deviation	
	ELRG_DEV		X	Result deviation description(s)	Holding time + Incorrect containers
	ELRG_RRES		YN	Reportable result	Y
	ELRG_DETF		YN	Detect flag	N
	ELRG_ORG		YN	Organic	Y
	ELRG_RDLM		U	Reporting detection limit	10
	ELRG_MDLM		U	Method detection limit	1
	ELRG_QLM		U	Quantification limit	10
	ELRG_DUNI		PU	Unit of detection/quantification limits	mg/l
	ELRG_CASC		X	CAS code	7782-44-7

Group Name: ELRG - Environmental Laboratory Reporting					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	ELRG_TICP	%	0DP	Tentatively identified compound (TIC) probability	10
	ELRG_TICT	s	0DP	Tentatively identified compound (TIC) retention time	2
	ELRG_RDAT	yyyy-mm-ddThh:mm	DT	Sample receipt date/time at laboratory	2020-12-05T12:00
	ELRG_SGRP		X	Sample delivery or batch code	ABC123
	ELRG_DTIM	yyyy-mm-ddThh:mm	DT	Analysis date and time	2020-12-06T09:09
	ELRG_TEST		X	Test or Suite Name	Suite A
	ELRG_TORD		X	Total or dissolved	Total
	ELRG_LOCN		PA	Analysis location	LAB
	ELRG_BAS		PA	Basis	WET
	ELRG_DIL		0DP	Dilution factor	5
	ELRG_LMTH		X	Leachate preparation method	10:1
	ELRG_LDTM	yyyy-mm-ddThh:mm	DT	Leachate preparation date and time	2020-12-06T09:19
	ELRG_IREF		X	Instrument reference number or identifier	ABC123
	ELRG_ITYP		X	Instrument type	GCMS
	ELRG_SIZE	mm	0DP	Size of material removed prior to test; value given indicates lowest sized material removed	2.1
	ELRG_PERP	%	1DP	Percentage of material removed	8.9
	ELRG_REM		X	Remarks	
	ELRG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ELRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS13

Group Rules

• Where there is no unit, the ELRG_RUNI data variable shall be set to "UNITLESS".

• Data type for data field heading ELRG_UNIT, ELRG_DUNI shall not be changed from PU.

• When reporting Tentatively Identified Compound (TIC) data variables the ELRG_CODE shall be P04100

Group Notes

• ELRG provides for the transfer of results provided by an environmental laboratory data. Linked to the SAMP group this results group is suitable for both results of geoenvironmental testing carried out in the field or in a chemical test laboratory.

• Geotechnical chemical testing is to be transferred using the GCHM group.

• The headings listed in ELRG represent a range of attributes to describe geoenvironmental test results to cater for both simple and extended reporting requirements. It is important to note there is no requirement to complete all headings in data files for every analysis carried out. Where additional quality control data is required then further user defined headings may be necessary to transfer additional information. It is imperative that data providers and data receivers agree the specification for ELRG data at the outset of a project.

• ELRG shall not be a repository of data that more properly belongs in a more appropriate, pre-existing AGS group. For example, geotechnical testing conducted by a geoenvironmental laboratory (such as an Atterberg test to a geotechnical standard) should be reported in the LLPL group and not in ELRG. ELRG permits inclusion of non-chemical results where appropriate e.g. No fibres, weight of sample, colour, % stones.

Replacing AGS 4.0 ERES with AGS 4.1 ELRG

To provide context for the changes made from AGS 4.0 (ERES) the below text is written to explain the rationale for changing the approach taken in AGS 4.1 for the transfer of geoenvironmental laboratory results/information.

• The naming of ERES (Environmental Contaminant Testing) and accompanying notes for guidance (NFG) focused the content too heavily on chemicals thus making presentation of non-chemical results challenging.

• Limitations of the ERES keyset provided significant challenges for complete reporting of various environmental datasets, including:

- Unable to fully report leachate test results without misuse of the ERES_MATX (Laboratory test matrix) and due to ERES_RUNI being excluded from the keyset

- Unable to report TIC (Tentatively Identified Compounds) data variables

- Unable to report gas testing results as multiple units for the same analyte are reported together

- Unable to report deviating sample / result details

• These limitations resulted in geoenvironmental laboratories developing a variety of ways to achieve keyset uniqueness for reporting some results. This inconsistent approach was not helpful to the industry / data receivers.

The ERES (Environmental Contaminated Testing) group resulted in information included on the laboratory certificates being unable to be transferred within an AGS 4.0 format file. In AGS 4.1 the ERES group is deprecated and replaced with this new group ELRG (Environmental Laboratory Reporting Group).

• ELRG provides a more generic construct that does not focus on chemicals/contaminants/determinands but instead the reporting deliverable (or result) from the geoenvironmental laboratory. The transfer format should be capable of transferring the information that is reported in the laboratory certificate (currently provided in Adobe Portable Document Format - PDF).

• ERES data headings are able to be transferred into ELRG with a minimal amount of data manipulation. ERES headings have been migrated into ELRG to provide compatibility.

• ELRG_MATX has been returned to the original pick list configuration of “SOLID”, “LIQUID”, “GAS” and adds “PRODUCT”.

• New heading ELRG_TADE (test additional descriptor) is a data heading providing the ability to use discriminators such as those that have been inserted into the ERES_MATX picklists previously (primarily leachates).

• In conjunction with ELRG_RUNI, ELRG_TADE provides the capacity to aid keyset uniqueness. Examples of ELRG_TADE are “CEN_2_1”, “CEN_10_1”, “NRA”, or references to relevant standards.

• Heading ELRG_TICN (tentatively identified compound (TIC) IUPAC name) is now a keyset heading in order to store the TIC name provided by the laboratory. To permit data analysis ELRG_CODE becomes a P code for TIC and the breakdown information is stored in the TIC headings. The headings ELRG_TICN, ELRG_TICP and ELRG_TICT allow for inclusion of tentatively identified compounds. ELRG_RTCD shall be flagged as 'TIC'.

• Heading ELRG_RDEV (result deviation descriptions) permits reporting the sample or result deviation. Multiple descriptions can be used e.g. Holding time; Wrong container.

• Heading ELRG_ITYP (Instrument Type) records instrument type information i.e. human readable description e.g. GCMS, ICP-OES

• Heading ELRG_TEST (Test or Suite name) enables ELRG results to be connected to testing suites. The test or suite name can either be provided within the LBST group, or via manual scheduling methods. If utilising LBSG/LBST groups, ELRG_TEST shall match LBST_TEST. Suites are often used in geoenvironmental test scheduling rather than individual determinands so this change better supports actual practices but still supports inclusion of single determinand tests where applicable.

Practical notes on data heading implementation:

Heading	Description	Implementation Instructions
LOCA_ID SAMP_TOP SAMP_REF SAMP_TYPE	Location identifier	These data headings should be provided by the sample creator / generated at sample creation time – these shall not be created by the testing laboratory
SAMP_ID	Sample unique identifier	If used, this should be provided by the sample creator / generated at sample creation time – SAMP_ID should not be created by the testing laboratory. This is NOT the laboratory assigned unique identifier (see ELRG_LSID).
SPEC_REF	Laboratory specimen reference	This is the subsample specimen (aliquot) taken for a specific test / suite of tests usually performed in one instrument. SPEC_REF should include the laboratory test **specimen** reference/ID (not the laboratory sample ID); the unique reference the laboratory assigns to the test specimen.

SPEC_DPTH	Depth to top of test specimen	For most samples the depth to top of test specimen is the same as SAMP_TOP. For intact samples that can be subsampled (e.g. undisturbed, piston, rock etc) the depth to top of test specimen can be different to the sample top, if the U (undisturbed) sample is trimmed or subsampled. i.e. Undisturbed sample 1.00m top, 2.00m base with a test specimen taken from the sample between 1.05m and 1.25m: SAMP_TOP = 1.00; SPEC_DPTH = 1.05; SPEC_BASE = 1.25, SAMP_BASE = 2.00
ELRG_CODE	Determinand code	This code is assigned to the laboratory determinand being tested and reported on the laboratory certificate. The full Descriptive name is included in the ABBR group. ELRG differs from ERES in AGS 4.0 which was specifically named for chemical determinands. The ELRG_CODE represents a more generic laboratory reported item which will normally be chemicals but could be non-chemicals i.e. % stones, colour, analyst name. Add specific for how to report TICs e.g. use P04100 (TIC) All ELRG_CODE entries included in the AGS data format file are to be listed in the ABBR group. New ELRG_CODE values should be registered on the AGS data format website before use.
ELRG_METH	Test method	This should be the laboratory's internal reference for the test method i.e. Test Method YY22
ELRG_MATX	Laboratory test matrix	SOLID – result relates to originating sample being a solid LIQUID – result relates to originating sample being a liquid GAS – result relates to originating sample being a gas PRODUCT– result relates to originating sample being a Non-Aqueous Phase Liquid (NAPL)
ELRG_TADE	Test additional descriptor	Additional description that enables uniqueness within the keyset. Primary use cases would be for leachate testing e.g. "CEN_2_1", "CEN_10_1", "NRA"
ELRG_TICN	Tentatively identified compound (TIC)	The name of the TIC (tentatively identified compound) as specified by the laboratory and referred to on the laboratory certificate
ELRG_RUNI	Result unit	A key field which helps create uniqueness in the keyset – allowing multiple results for the same analyte to be reported (examples being leachate and gas testing). Units included in ELRG_RUNI must be fully defined in the UNIT group (Rule 15). ELRG_RUNI is a REQUIRED field (Rule 10b) which enforces the inclusion of units in the data file for test results. Where a test result has no unit, the ELRG_RUNI data shall be set to 'UNITLESS'. ELRG_RUNI is the unit applicable to ELRG_RVAL (result value), ELRG_RTXT (reported result) and ELRG_RDLM (reporting detection limit)
ELRG_SGRP	Sample delivery or batch code	This should be a single identifier assigned by the laboratory to a batch of samples received at the laboratory. Inclusion of this data within the AGS file enables easier linking of test results to report certificates.
ELRG_LSID	Laboratory sample ID	This is the sample ID created by the laboratory, assigned to each sample when received at the laboratory, allowing the laboratory to assign an identifier in addition to the SAMP Group keyset provided by the client. This enables a 1-to-1 relationship between client and laboratory sample referencing systems. The laboratory sample identifier can be assigned to multiple containers: i.e. for a single environmental water (EW) sample, comprising multiple vials and jars, there is only one laboratory sample identifier that refers to this group of samples.
ELRG_RTCD	Result type	Shall be flagged as "TIC" if ELRG_TICN is populated.
ELRG_LQLF	Laboratory qualifiers	e.g. ">", "<"
ELRG_RVAL	Result value	Numeric value as reported in the laboratory certificate. Data variable is null (Rule 12) if ELRG_RTXT is non-numeric e.g. "No fibres". Data variable is null (Rule 12) if ELRG_LQLF is populated e.g. "<"
ELRG_RTXT	Reported result	Exactly as reported in the laboratory certificate - with qualifiers, to the same number of decimal places.
ELRG_NAME	Determinand name	Exactly as reported in the laboratory certificate.

ELRG_TNAM	Laboratory analytical name	Laboratory internal test name.
ELRG_DCAT	Determinand category	To enable transfer of any determinand category groups as defined by the laboratory (normally held within a laboratory LIMS).
ELRG_TESN	Test reference	If applicable, the laboratory internal test reference for individual test.
ELRG_FDEV	Flagged deviation	Y denotes a deviating sample/result; N denotes non-deviating sample/result; can be null (Rule 12) when not applicable.
ELRG_RDEV	Result deviation description(s)	Any deviations for *individual results* are to be included in ELRG_RDEV to satisfy reporting requirements in standards such as TPS63 (Edition 2) Dec 2019 and ISO/IEC 17025 International Standard 3rd Edition (other standards may apply). It is anticipated the flexibility available in this heading enables individual labs to report their own deviating sample / result criteria / codification systems. Multiple deviation remarks may be applicable i.e. incorrect container + deviation from method. Where a test result has more than one deviation description these should be concatenated using the + character by default or character specified in TRAN_RCON (Concatenator).
ELRG_RRES	Reportable result	Can be null (Rule 12) when not applicable
ELRG_DETF	Detect flag	Y denotes detected analytes. N denotes non-detects. Can be null (Rule 12) when not applicable.
ELRG_ORG	Organic	Y denotes organic constituents. N denotes inorganic constituents. Can be null (Rule 12) when not applicable
ELRG_RDLM	Reporting detection limit	ELRG_RDLM is the reporting detection limit applicable to the ELRG_RVAL (result value) and ELRG_RTXT (reported result) headings. For example, this will include any dilution factors applied to the tested specimen. The applicable unit is defined in ELRG_RUNI (result unit).
ELRG_MDLM	Method detection limit	ELRG_MDLM is the method detection limit. The applicable unit is defined in ELRG_DUNI (unit of detection / quantification limits).
ELRG_QLM	Quantification limit	ELRG_QLM is the quantification limit for the test method. Concentration level above which the result can be quantified with confidence. The applicable unit is defined in ELRG_DUNI (unit of detection / quantification limits).
ELRG_DUNI	Unit of detection / quantification limits	ELRG_DUNI is the unit applicable to ELRG_MDLM (method detection limit), and ELRG_QLM (quantification limit).
ELRG_CASC	CAS code	This heading provides the opportunity to record the CAS code for any ELRG_CODE (determinand code) e.g. if a P-code has been used or where a CAS code can be used to describe a TIC entered in ELRG_TICN (Tentatively identified compound (TIC) name).
ELRG_SGRP	Sample delivery or batch code	This is the identifying code given to a batch of samples received by the laboratory and registered on sample management systems. Generally, this is referred to as the 'batch code'.
ELRG_LSID	Laboratory sample ID	The laboratory sample identifier is the identification code assigned to each individual sample by the receiving laboratory. This laboratory sample identifier is additional to the sample identification data provided by whoever is issuing/scheduling the samples to the laboratory i.e. SAMP_TOP, SAMP_REF, SAMP_TYPE, SAMP_BASE, SAMP_ID etc
SPEC_BASE	Specimen base depth	Permits the reporting of the absolute base depth of specimens created in the laboratory. i.e. Undisturbed sample 1.00m top, 2.00m base with a test specimen taken from the sample between 1.05m and 1.25m:

		SAMP_TOP = 1.00; SPEC_DPTH = 1.05; SPEC_BASE = 1.25, SAMP_BASE = 2.00
ELRG_TEST	Test/Suite	This is intended to be the test or suite name/reference, as defined in the Laboratory LBST_TEST (Test Name), during AGS based electronic scheduling. However, this heading can also be manually populated from alternative sources (non AGS format test schedules provided by the client for example) or if the LBST (Testing Schedule Details) group is not populated within an AGS submission.
ELRG_TORD	Total or dissolved	The expected data variable is Total (for total or undissolved), Dissolved (for dissolved or filtered), or null (Rule 12) when not applicable.
ELRG_DIL	Dilution factor	Dilution factor applicable to the test individual sample requirements e.g. if a test result needed to be diluted to fit within a determination range. This shall not to be used for leachate dilution reporting which is included in ELRG_TADE (test additional descriptor).
ELRG_LMTH	Leachate preparation method	Further details on leachate preparation method in addition to that described in ELRG_TADE (test additional descriptor).
ELRG_ITYP	Instrument type	Human readable description of instrument type i.e. GCMS, ICP-OES.
ELRG_CRED	Accrediting body and reference number (when appropriate)	The accreditation status and reference number are included under the ELRG_CRED heading where appropriate. Where a test has more than one accreditation status these should be concatenated into the ELRG_CRED field using the + character by default or character specified in TRAN_RCON (Concatenator)

Group Name: ERES - Environmental Contaminant Testing					
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	ES
*	**SAMP_ID**		ID	Sample unique identifier	ABC121415010
*	**SPEC_REF**		X	Laboratory specimen reference or Laboratory ID	CL/477627
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*R	**ERES_CODE**		PA	Chemical code	7440-42-8
*	**ERES_METH**		X	Test method	In house method no 231241
*R	**ERES_MATX**		PA	Laboratory test matrix	LIQUID
*	**ERES_RTYP**		PA	Run type (Initial or Reanalysis)	INITIAL
	ERES_TESN		X	Test reference	2
	ERES_NAME		X	Chemical name	Boron
	ERES_TNAM		X	Laboratory analytical test name	MQ45
	ERES_RVAL		U	Result value	0.25
R	**ERES_RUNI**		PU	Result unit	mg/l
	ERES_RTXT		X	Reported result	<2.3
	ERES_RTCD		PA	Result type	TRG
	ERES_RRES		YN	Reportable result	Y
	ERES_DETF		YN	Detect flag	Y
	ERES_ORG		YN	Organic	N
	ERES_IQLF		X	Interpreted qualifiers	<
	ERES_LQLF		X	Laboratory qualifiers	<
	ERES_RDLM		U	Reporting detection limit	10
	ERES_MDLM		U	Method detection limit	1
	ERES_QLM		U	Quantification limit	10
	ERES_DUNI		PU	Unit of detection / quantification limits	mg/l
	ERES_TICP	%	0DP	Tentatively Identified Compound (TIC) probability	93
	ERES_TICT	s	0DP	Tentatively Identified Compound (TIC) retention time	203
	ERES_RDAT	yyyy-mm-dd	DT	Sample receipt date at laboratory	2006-11-15
	ERES_SGRP		X	Sample delivery or batch code	ERS151106
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	ERES_DTIM	yyyy-mm-ddThh:mm	DT	Analysis date and time date	2006-11-17T12:10

Group Name: ERES - Environmental Contaminant Testing					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	ERES_TEST		X	Test Name as defined in LBST_TEST during electronic scheduling	VOC
	ERES_TORD		X	Total or dissolved	Total
	ERES_LOCN		PA	Analysis location	LAB
	ERES_BAS		PA	Basis	WET
	ERES_DIL		0DP	Dilution factor	10
	ERES_LMTH		X	Leachate preparation method	10:1 Leachate method
	ERES_LDTM	yyyy-mm-ddThh:mm	DT	Leachate preparation date and time	2006-11-16T10:00
	ERES_IREF		X	Instrument Reference No or Identifier	GCMS19
	ERES_SIZE	mm	0DP	Size of material removed prior to test; value given indicates lowest sized material removed	2
	ERES_PERP	%	1DP	Percentage of material removed	10.1
	ERES_REM		X	Remarks	
	ERES_LAB		X	Name of testing laboratory/ Organization	ACME Laboratories plc
	ERES_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS13

Group Notes

• ERES provides for the transfer of geoenvironmental chemical testing data. Linked to the SAMP group this results group is suitable for both results of geoenvironmental testing carried out in the field or in a chemical test laboratory.

• Geotechnical chemical testing, relating to ground aggressivity, is to be transferred using the GCHM group.

• The headings listed in ERES represent a range of attributes to describe chemical test results to cater for both simple and extended reporting requirements. It is important to note that there is no requirement to complete all headings in data files for every analysis carried out. Only the key headings and the headings that are relevant to the testing and test result specification need be completed or used. Where additional QC data is required then further user defined headings may be necessary to transfer additional information. It is imperative that data providers and data receivers agree the specification for ERES data at the outset of a project.

• SPEC_REF should include the laboratory test specimen reference, or Laboratory ID; the unique reference the laboratory assigns to the test specimen (in AGS 3 this data was typically included in CNMT_LBID).

• ERES_CODEs must be freely available in the public domain. All ERES_CODEs included in the file are to be listed in the ABBR group. New ERES_CODE values should be registered on the AGS website before use.

• The ERES_CODE together with a matrix (ERES_MATX) should provide full definition of the chemical and phase of the material that has been tested. Note that ERES_CODE and ERES_MATX are REQUIRED fields.

• ERES_RUNI is a REQUIRED field (Rule 10b) which enforces the inclusion of units in the data file for test results. Where a test result has no unit, the ERES_RUNI data shall be set to "-" to clarify this.

• Units included in ERES_RUNI must be fully defined in the UNIT group (Rule 15). It is possible that units require conversion when the data is received and amalgamated into project databases to ensure that data are consistent across monitoring tranches and appropriate for the assessment.

• It is suggested that in some cases it might be appropriate to make the ERES_IREF data a set of codes referring to full instrument details in the ABBR group. In this case the heading type would be changed to 'PA'.

• The headings ERES_TICP and ERES_TICT allow for inclusion of tentatively identified compounds. Note that ERES_RTCD would be flagged as 'Tentative' if this were the case for a record.

• The accreditation status and reference number are included under the ERES_CRED heading where appropriate. Where a test has more than one accreditation status these should be concatenated into the ERES_CRED field using the + character by default or character specified in TRAN_RCON.

~~• ERES_SIZE and ERES_PERP are additions to cover the reporting requirements for geotechnical testing (e.g. BS1377) for which the result only relates to the size of material tested.~~

~~• ERES_RVAL should be left blank and detection limits defined if the test was below the detection limits.~~

~~• ERES_TEST should be completed with the test name (LBST_TEST) if the test was scheduled using LBST group. This provides traceability between schedule and results where this is important.~~

Group Name: ESCG - Effective Stress Consolidation Tests - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ESCG_TYPE		PA	Test type	CD
	ESCG_CELL		X	Type of equipment used	250mm dia Hydraulic cell
	ESCG_COND		PA	Sample condition	UNDISTURBED
	ESCG_SDIA	mm	2DP	Test specimen diameter	100.15
	ESCG_HIGT	mm	2DP	Test specimen height	100.25
	ESCG_MCI	%	X	Initial water/moisture content	21.2
	ESCG_MCF	%	X	Final water/moisture content	18.6
	ESCG_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	ESCG_BDEF	Mg/m3	2DP	Final bulk density	2.20
	ESCG_DDEN	Mg/m3	2DP	Initial dry density	1.75
	ESCG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	ESCG_IVR		3DP	Initial voids ratio	0.812
	ESCG_SATR	%	0DP	Initial degree of saturation	98
	ESCG_LOAD		X	Type of loading (strain)	Equal, Free, triaxial
	ESCG_DRAG		X	Type of drainage	To top, both ends, radial inwards, radial outwards
	ESCG_PPM		X	Pore pressure measurement location	Centre base, offset
	ESCG_SPRS	kPa	2SF	Swelling pressure, if measured	100
	ESCG_SATM		X	Method of saturation	Back pressure, cell only, water permeation
	ESCG_SINC	kPa	0DP	Saturation increments	50
	ESCG_SDIF	kPa	0DP	Differential pressure during saturation	10
	ESCG_CELF	kPa	0DP	Cell or diaphragm pressure at end of saturation	310
	ESCG_BACF	kPa	0DP	Back pressure at end of saturation	300

Group Name: ESCG - Effective Stress Consolidation Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	ESCG_BVAL		2DP	B value at end of saturation	0.96
	ESCG_SVOL	ml	1DP	Volume of water taken in during saturation	10.0
	ESCG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Sample from base of U100 sample, axis vertical
	ESCG_METH		X	Test method	BS1377, part 6, cl 5
	ESCG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ESCG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	ESCG_ISVR		3DP	Voids ratio at in situ vertical stress	0.699
	ESCG_ISVS	kPa	0DP	In situ vertical stress	200
	ESCG_ISST	%	2DP	Axial strain at in situ vertical stress	0.85
	ESCG_PCP	kPa	0DP	Maximum pre-consolidation pressure	500
	ESCG_YSR		1DP	Yield stress ratio (based on Casagrande Method)	2.5
	ESCG_CC		3DP	Compression index over stress increment	0.085
	ESCG_CS		3DP	Swelling index over stress increment	0.009
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS9
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ESCG_DEV		X	Deviations from the test method	

Group Notes

• ESCG and ESCT are primarily designed to take data from the consolidation tests detailed in BS1377 Part 6 including hydraulic cells such as the Rowe cell. Other types of testing can be included but headings should only be populated where the data is consistent with those of the BS tests and ambiguity of terminology should be avoided.

• ESCG_IVR shall be used to report the initial voids ratio at the start of testing. This will not necessarily be the same as the voids ratio at the start of first stage consolidation ESCT_VR0 due to saturation.

Group Name: ESCT - Effective Stress Consolidation Tests - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**ESCT_INCN**		X	Consolidation stage number	3

Group Name: ESCT - Effective Stress Consolidation Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	ESCT_REM		X	Additional stage specific details	Stage terminated at 90% pwp dissipation
	ESCT_INCC	kPa	0DP	Cell or diaphragm pressure applied during stage	600
	ESCT_INCB	kPa	0DP	Back pressure applied during stage	300
	ESCT_PWP0	kPa	0DP	Pore pressure at end of undrained loading	580
	ESCT_PWPF	kPa	0DP	Pore pressure at end of consolidation stage	300
	ESCT_INCF	kPa	0DP	Effective stress at end of consolidation stage	310
	ESCT_VR0		3DP	Voids ratio at start of increment	0.801
	ESCT_VRE		3DP	Voids ratio at end of stress increment	0.621
	ESCT_DISS	%	0DP	Percentage pore pressure dissipation at end of stage	98
	ESCT_DSET	mm	3DP	Settlement measured during consolidation stage	0.234
	ESCT_DVOL	ml	1DP	Volume change measured during consolidation stage	22.1
	ESCT_INMV	m2/MN	2SF	Reported coefficient of volume compressibility over stress increment	0.32
	ESCT_INCV	m2/yr	2SF	Reported coefficient of consolidation over stress increment	4.1
	ESCT_INSC		2SF	Coefficient of secondary compression over stress increment	0.12
	ESCT_CVME		X	Method used for deriving Cv	Log time PWP, root time settlement
	ESCT_TEMP	DegC	1DP	Average temperature over stress increment	22.0
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS9
	ESCT_INK	m/s	XN	Permeability over stress increment (t90)	0.0000000093

Group Rules

• ESCT_INK shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

Group Notes

• ESCT_DVOL - consolidation (flow of water out of specimen) to be reported as positive and dilatancy or swelling (flow of water into specimen) to be reported as negative.

Group Name: FGHG - Field Geohydraulic Testing - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**FGHG_TOP**	m	2DP	Depth to top of test zone	12.20
*	**FGHG_BASE**	m	2DP	Depth to base of test zone	12.95
*	**FGHG_TESN**		X	Test reference	2
	FGHG_TDIA	mm	0DP	Diameter of test zone	150
	FGHG_SDIA	mm	0DP	Inside diameter of installation standpipe or borehole casing	19
	FGHG_ODIA	mm	0DP	Outside diameter of installation standpipe or borehole casing	26
	FGHG_HBAS	m	2DP	Depth of borehole during test (excluding tests in installations)	15.35
	FGHG_CAS	m	2DP	Depth of casing during test (excluding tests in installations)	12.20
	FGHG_SFAC	m	2DP	Shape factor for test zone	2.34
	FGHG_SFRF		X	Shape factor reference	BS EN ISO 22282-1 Annex B (4) Cylindrical cavity with:1,2 < L/D < 10
	FGHG_DATE	yyyy-mm-dd	DT	Test date	2008-01-23
	FGHG_TYPE		PA	Type of test	Constant
	FGHG_CNFG		PA	Test configuration	SP
	FGHG_METH		X	Test method	BS EN ISO 22282-2:2012
	FGHG_PRWL	m	2DP	Depth to water in borehole or installation prior to test	10.60
	FGHG_AWL	m	2DP	Depth to assumed standing water level used for calculations of head during test	10.00
	FGHG_HEAD	m	2DP	Applied total head of water at centre of test zone	20.50
	FGHG_FLOW	l/s	1DP	Average flow rate during test	2.3
	FGHG_IPRM	m/s	1SCI	Representative permeability for test	5.1E-9
	FGHG_ILUG		XN	Representative Lugeon value for water pressure test	
	FGHG_FTYP		PA	Flow type for water pressure test	Laminar
	FGHG_REM		X	Test remarks	
	FGHG_ENV		X	Details of weather and environmental conditions during test	Sunny and warm
	FGHG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	FGHG_OPER		X	Name of test operator	
	FGHG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

Group Notes

• The FGHG and related groups are for reporting the results of field geohydraulic permeability tests carried out in general accordance with BS EN ISO 22282-2 (Water permeability tests in a borehole using open systems) and -3 (Water pressure tests in rock), and the General rules of Part 1. These cover the variable head test methods (rising and falling head) and constant head/constant flow-rate methods in boreholes and installations, and 'packer tests' (now referred to in the standard as water pressure tests).

• The FGHG groups allow reporting of additional information required by the standards and in particular the data from test instrumentation using flowmeters, pressure transducers, etc which were not included in the AGS4.0 IPRT group.

• The FGHG groups shall not be used for Pumping tests covered in Part 4 of the standard nor Infiltrometer tests in Part 5. (N.B. Infiltrometer tests here are not the same as 'soakaway' tests covered elsewhere.)

• All reported depths are assumed to relate to ground level at the time of test, as used elsewhere and recorded in LOCA_GL

• For tests in boreholes FGHG_TOP and FGHG_BASE are defined by depths of borehole, casing, packers, etc. For tests in standpipe type installations FGHG_TOP and FGHG_BASE are defined by the installation response zone, and correspond to MONG_TRZ and MONG_BRZ. However, for response zones in non-homogenous materials of different permeability it may be appropriate to use a different depth range for interpretation.

• FGHG_TDIA is the diameter of the borehole for tests in both boreholes and installations (where the response zone diameter corresponds to the borehole diameter in the latter).

• FGHG_SDIA is the diameter of rising/falling cylinder of water used in volume change calculation for variable head tests only. This heading is not required for constant head or constant flow-rate tests.

• FGHG_HBAS is the base depth of a test in a borehole, for example, double packer configurations where the test section base does not correspond to the base of the borehole.

• FGHG_SFAC and FGHG_SFRF are to report shape (or intake) factors in BS EN ISO 22282-1, Hvorslev (1951) or other reference stated.

• FGHG_CNFG is to report test configuration e.g. borehole, standpipe, standpipe piezometer, well, single packer, double packer, single instrumented packer, double instrumented packer.

• FGHG_PRWL and FGHG_AWL are expressed as depths to water in metres, but may be calculated values obtained from pressure measurement devices in the test section.

• FGHG_PRWL refers to the depth to water prior to any changes made to initiate the test.

• FGHG_HEAD is the applied head of water in the test section in excess of the ambient head due to the assumed equilibrium groundwater level. It may be calculated from pressure measurement devices in the test section. This applies only to single stage constant head/flow tests with a corresponding value for FGHG_FLOW.

• FGHG_IPRM is used to report the assessed permeability from non-multistage type tests (e.g. VHT) and the representative permeability from analysis of multistage tests (e.g. water pressure/'packer' tests) where this has been assessed. See FGHS for reporting results for separate stages of multistage tests.

• FGHG_FTYP is the flow type identified during a water pressure test in accordance with Annex B of BS EN ISO 22282-3, or other specification.

Group Name: FGHI - Field Geohydraulic Testing - Instrumentation Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**FGHG_TOP**	m	2DP	Depth to top of test zone	12.20
*	**FGHG_BASE**	m	2DP	Depth to base of test zone	12.95
*	**FGHG_TESN**		X	Test reference	2
*	**FGHI_INST**		ID	Instrument reference / serial number	P1
	FGHI_TYPE		X	Test record type	Pressure and temperature
	FGHI_DETL		X	Details of instrument	VWP-3000
	FGHI_LOCT		X	Instrument position	Centre of packer test section
	FGHI_REM		X	Test remarks	
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

Group Notes

• The FGHI group, together with the FGHT group, allows transfer of test records (readings or measurements) made during the test where this is required in the test specification.

• FGHI_INST defines a specific measuring device within the test system by a unique reference. Further information on the type, model, etc can be provided in FGHI_TYPE and FGHI_DETL.

• Details of the location/position of the measuring device can be provided in FGHI_LOCT, including depths in relation to the test section defined by FGHG_TOP and FGHG_BASE.

• Multiple simultaneous readings in the FGHT group can be accommodated through FGHI_INST, e.g. simultaneous flow and pressure readings at 1 minute intervals, including pressure readings from more than one location within the system.

Group Name: FGHS - Field Geohydraulic Testing - Test Results (per stage)					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**FGHG_TOP**	m	2DP	Depth to top of test zone	12.20
*	**FGHG_BASE**	m	2DP	Depth to base of test zone	12.95
*	**FGHG_TESN**		X	Test reference	2
*	**FGHS_STG**		0DP	Stage number of multistage test	1
	FGHS_STTM	yyyy-mm-ddThh:mm:ss	DT	Start of stage date / time	2020-07-01T10:49:20
	FGHS_ENTM	yyyy-mm-ddThh:mm:ss	DT	End of stage date / time	2020-07-01T10:49:20
	FGHS_HEAD	m	2DP	Applied head of water during test stage at centre of test zone	20.50
	FGHS_FLOW	l/s	1DP	Average flow rate during test stage	2.3
	FGHS_IPRM	m/s	1SCI	Permeability for test stage	5.1E-9
	FGHS_ILUG		XN	Lugeon value for test stage	
	FGHS_REM		X	Test remarks	
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

Group Notes

• The FGHS group is used for reporting calculated permeability results for multistage constant head/flow-rate tests, including water pressure tests. For non- multistage tests where all results are reported in FGHG then the FHGS group shall not be used.

Group Name: FGHT - Field Geohydraulic Testing - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**FGHG_TOP**	m	2DP	Depth to top of test zone	12.20
*	**FGHG_BASE**	m	2DP	Depth to base of test zone	12.95
*	**FGHG_TESN**		X	Test reference	2
*	**FGHI_INST**		ID	Instrument reference / serial number	P1
*	**FGHT_TIME**	yyyy-mm-ddThh:mm:ss	DT	Test date / clock time of reading	2020-07-01T10:49:20
*	**FGHT_TYPE**		PA	Test record type	FLWR
	FGHS_STG		0DP	Stage number of multistage test	1.00E+00
	FGHT_DURN	hh:mm:ss	T	Elapsed time of reading during test or test stage	01:20:00
	FGHT_RDNG		U	Test record (reading)	123.321, 2000 or 0.0023
	FGHT_UNIT		PU	Reading units	
	FGHT_REM		X	Test record remark	
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

Group Notes

• None

Group Name: FLSH - Drilling Flush Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**FLSH_TOP**	m	2DP	Depth to top of flush zone	10.00
*	**FLSH_BASE**	m	2DP	Depth to bottom of flush zone	20.00
	FLSH_TYPE		PA	Type of flush	Water
	FLSH_RETN	%	0DP	Flush return minimum (as percentage)	50
	FLSH_RETX	%	0DP	Flush return maximum (as percentage)	70
	FLSH_COL		X	Colour of flush return	White
	FLSH_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. drilling journal, mud logging or test records)	FS5

Group Notes

• None

Group Name: FRAC - Fracture Spacing					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**FRAC_FROM**	m	2DP	Depth to top in hole, or distance to start on traverse, of the zone	31.20
*	**FRAC_TO**	m	2DP	Depth to base in hole, or distance to end on traverse, of the zone	33.65
*	**FRAC_SET**		X	Discontinuity set reference	J3
	FRAC_IMAX	mm	XN	Maximum fracture spacing over zone	350
	FRAC_IAVE	mm	XN	Average fracture (modal) spacing over zone	220
	FRAC_IMIN	mm	XN	Minimum fracture spacing over zone	NI
	FRAC_FI		XN	Fracture Index / frequency over zone (fractures per metre)	15
	FRAC_REM		X	Comments on fracture set	2
	FILE_FSET		X	Associated file reference (e.g. logging field sheets)	FS4

Group Rules

• FRAC_IMAX, FRAC_IAVE, FRAC_IMIN and FRAC_FI shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 or for 'Not intact' (NI).

Group Notes

• FRAC is used to include fracture set details derived from rock core. Fracture information collected from scanline surveys of rock exposures or similar should be recorded in the DISC group.

• It is not typical to define fracture set spacing's as both min/avg/max fracture spacing and Fracture Index. The requirement for one or other should be specified.

Group Name: FRST - Frost Susceptibility Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	FRST_COND		PA	Sample condition	RECOMPACTION
	FRST_DDEN	Mg/m3	2DP	Dry density of specimens after preparation	1.96

Group Name: FRST - Frost Susceptibility Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	FRST_MC	%	X	water/moisture content of specimens at preparation	24
	FRST_HVE1	mm	1DP	Frost heave, first specimen	3.0
	FRST_HVE2	mm	1DP	Frost heave, second specimen	4.5
	FRST_HVE3	mm	1DP	Frost heave, third specimen	3.5
	FRST_HVE	mm	1DP	Mean heave of 3 specimens	3.6
	FRST_STAB	%	2SF	Amount of stabiliser added	23
	FRST_STYP		X	Type of stabiliser added	Cement
	FRST_REM		X	Notes on frost susceptibility testing as per TRRL SR 829	
	FRST_METH		X	Test method	BS 812-12
	FRST_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	FRST_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS20
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	FRST_DEV		X	Deviations from the test method	

Group Notes

• BS 812 requires the results of three specimens and the mean to be reported. However, all three specimens are prepared to exactly the same density and water/moisture content and hence both the standard and the data format only require one density and water content.

Group Name: GCHM - Geotechnical Chemistry Testing					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*R	**GCHM_CODE**		PA	Determinand	AS
*	**GCHM_METH**		X	Test method	BS 1377-3:2018
*R	**GCHM_TTYP**		PA	Test type	SOLID_21 WATER EXTRACT
	GCHM_RESL		U	Test result	14.23
R	**GCHM_UNIT**		PU	Test result units	mg/l

Group Name: GCHM - Geotechnical Chemistry Testing					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	GCHM_NAME		X	Client/laboratory preferred name of determinand	Water Soluble Sulfate
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	2:1 water/soil extract
	GCHM_REM		X	Remarks on test	
	GCHM_LAB		X	Name of testing laboratory/ organization	ACME Laboratories plc
	GCHM_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS23
	GCHM_RTXT		X	Reported result	<0.01
	GCHM_DLM		U	Lower detection limit	0.01
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	GCHM_DEV		X	Deviations from the test method	
	GCHM_SGRP		X	Sample delivery or batch code	ABC123
	GCHM_LSID		X	Laboratory sample ID	ABC123-A
	GCHM_RDEV		X	Result deviation description(s)	Incorrect container
	GCHM_RDAT	yyyy-mm-ddThh:mm	DT	Sample receipt date/time at laboratory	2020-12-07T09:13
	GCHM_DTIM	yyyy-mm-ddThh:mm	DT	Analysis date and time	2020-12-07T12:11
	GCHM_TEST		X	Test or Suite Name	Chalk content
	GCHM_IREF		X	Instrument reference no or identifier	XYZ789
	GCHM_ITYP		X	Instrument type	GCMS
	GCHM_SIZE	mm	0DP	Size of material removed prior to test; value given indicates lowest sized material removed	2.1
	GCHM_PERP	%	1DP	Percentage of material removed	8.9

Group Rules

• Where a reading has no unit, the GCHM_UNIT data shall be set to "UNITLESS".

• Units included in GCHM_UNIT shall be fully defined in the UNIT group (Rule 15), the unit group is case sensitive.

• Data type for data field heading GCHM_UNIT shall not be changed from PU.

Group Notes

• GCHM is used to report chemical testing carried out for geotechnical design. It is to be used for testing in accordance with BS 1377, BS EN 1744-1+A1, testing for use in the assessment described in BRE Special Digest 1 and/or buried steel testing described in the Design Manual for Roads and Bridges; CD 375. Chemical testing for contamination or water quality testing is reported in ERES. Laboratory resistivity test results should be reported using the LRES Group.

• The GCHM_CODE abbreviations to report testing to BRE Special Digest 1 and BS 1377-3 would be:

PH = Acidity/alkalinity (pH value to nearest 0.1)

WS = Water-soluble sulfate (as mg/l SO4)

AS = Acid-soluble sulfate (as % SO4)

TS = Total sulfur (as % S)

WMG = Water/soil extract Magnesium (as mg/l)

NH4 = Ammonium ion (as mg/l)

CL = Chloride (as mg/l)

NO3 = Nitrate (as mg/l)

ACO2 = Aggressive Carbon dioxide (as mg/l)

CO2 = Carbonate content (as %CO2)

LOI = Loss on ignition (as %)

OGM = Organic matter content (as %)

TDS = Total dissolved solids (in mg/l to 2SF)

CACO3 = Chalk content (as %CaCO3)

REDOX = Redox Potential (as mV)

• All GCHM_CODE abbreviations reported in this group are to be listed in the ABBR group.

• GCHM_UNIT is a REQUIRED field (Rule 10b) which enforces the inclusion of units for all test results.

• For a chalk content test carried out to BS1377-3, it would be good practice to report both a Carbonate content (as CO2) and the chalk content (as %CaCO3).

Group Name: GEOL - Field Geological Descriptions					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**GEOL_TOP**	m	2DP	Depth to the top of stratum	16.21
*	**GEOL_BASE**	m	2DP	Depth to the base of description	17.25
	GEOL_DESC		X	General description of stratum	Stiff grey silty CLAY
	GEOL_LEG		PA	Legend code	102
	GEOL_GEOL		PA	Geology code	LC
	GEOL_GEO2		PA	Second geology code	SAND
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	GEOL_BGS		PA	BGS Lexicon code	CHAM
	GEOL_FORM		X	Geological formation or stratum name	Charmouth Mudstone Formation
	GEOL_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. logging field sheets, photographs of exposures)	FS4

Group Notes

• GEOL is used to transfer the field descriptions of geological materials required by EN ISO 14688-1 and 14689, and as described in guidance including BS 5930. Stratum descriptions recorded by the driller should be recorded in DLOG. This information will not need to be duplicated wholesale in GEOL

• GEOL_GEOL and GEOL_GEO2 can contain codes that are defined by the organization supervising the investigation and may be an organization or project based classification of the strata. The codification is typically determined by the investigation supervisor, designer or consultant. The inclusion of the codification by a ground investigation contractor and provision in the AGS Format files has to be specified in full in the investigation specification as codification is typically not a requirement of investigation standards.

• A suggested use of the GEOL_GEOL and GEOL_GEO2 codes is as follows:

a) The geology code GEOL_GEOL relates to the Geological Name of each geological unit, for example:

RA as an abbreviation for Recent Alluvium

LC as an abbreviation for London Clay

b) The second geology code GEOL_GEO2 is an abbreviation for the material type of each stratum, for example:

CS as an abbreviation for sandy CLAY

C as an abbreviation for CLAY

The BGS classification system (http://nora.nerc.ac.uk/9179/) could be a suitable classification for use on particular projects.

• The stratum code GEOL_STAT may be used as the reference letter or number of each stratum on a trial pit log. Its sole purpose is to link the stratum shown on the face sketch of the trial pit to the stratum description given elsewhere on the log. It is therefore not used on borehole logs and it is not used on simple trial pit logs which are presented in borehole log format, without a face sketch. GEOL_STAT is usually just the numbers 1, 2, 3 etc or the letters A, B, C etc.

• GEOL_STAT also appears in the SAMP Group and several of the in situ testing Groups so that it is possible to indicate which stratum on a trial pit face a sample was taken from, or an in situ test carried out in.

• GEOL_BGS can be included if required to contain the abbreviations from the British Geological Survey (BGS) lexicon of strata that is associated with the stratum. There is a list of these abbreviations provided and maintained on the BGS website: www.bgs.ac.uk/lexicon/home.html.

• BS 5930 states that the geological formation may also be named. Typically this information is presented as part of the exploratory hole log at the end of stratum description. If this is required, this data must be specified and the data is not included in GEOL_DESC but transferred in an additional heading GEOL_FORM. There is a link between GEOL_FORM and GEOL_BGS, however, the use of GEOL_FORM will include for strata that do not have BGS Lexicon codes; for example, types of ANTHROPOGENIC GROUND such as embankment fill.

• If more detailed information on material weathering grades is required then these details are to be included in the WETH group.

Group Name: GRAG - Particle Size Distribution Analysis - General

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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	GRAG_UC		1SF	Uniformity coefficient D60/D10	10
	GRAG_VCRE	%	1DP	Percentage of material tested greater than 63mm (cobbles)	0.0
	GRAG_GRAV	%	1DP	Percentage of material tested in range 63mm to 2mm (gravel)	30.1
	GRAG_SAND	%	1DP	Percentage of material tested in range 2mm to 63um (sand)	40.4
	GRAG_SILT	%	1DP	Percentage of material tested in range 63um to 2um (silt)	14.5
	GRAG_CLAY	%	1DP	Percentage of material tested less than 2um (clay)	15.0
	GRAG_FINE	%	1DP	Percentage less than 63um	29.5
	GRAG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	
	GRAG_METH		X	Test method	BS1377

Group Name: GRAG - Particle Size Distribution Analysis - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	GRAG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	GRAG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	F21
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	GRAG_DEV		X	Any deviation from the specified test procedure, and any other information that could be important for interpreting the test results.	
	GRAG_PDEN	Mg/m3	XN	Particle density used in calculations with prefix # if value assumed	#2.65
	GRAG_PRET		X	Method of pre-treatment, when applied	Hydrogen peroxide, hydrochloric acid
	GRAG_SUFF		YN	Amount of soil tested was sufficient to comply with recommended minimum mass	Y
	GRAG_EXCL		X	Remark if the size of the fractions is not expressed as percentage of total dry mass, together with the nature and amount of fractions excluded.	
	GRAG_CC		1SF	Coefficient of curvature	9

Group Notes

• GRAG is intended to report general information for particle size distribution testing carried out in accordance with BS EN ISO 17892-4.

• The data in GRAG_CRED indicates the accreditation status of the testing as a whole. Therefore if part of the test method used, for example the pipette rather than the sieve, is not accredited, the GRAG_CRED should be appropriately qualified or left empty.

• It should be noted that the results of percentage passing reported in GRAT_PERP are to 0DP, in accordance with BS EN ISO 17892-4, whereas the calculated proportions of the various particle size fractions reported in GRAG_VCRE, etc are to 1DP. This is intended to minimise any discrepancy, where the sum of the individual particle size fractions does not add up to exactly 100%, from using source data with a greater resolution than presented in the GRAT_PERP values rounded to 0DP.

Group Name: GRAT - Particle Size Distribution Analysis - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**GRAT_SIZE**	mm	3SF	Sieve or particle size	3.35
	GRAT_PERP	%	0DP	Percentage passing/finer than GRAT_SIZE	25

Group Name: GRAT - Particle Size Distribution Analysis - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	GRAT_TYPE		PA	Test type	WS
	GRAT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	F21

Group Notes

• None.

Group Name: HDIA - Hole Diameter by Depth					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**HDIA_DPTH**	m	2DP	Depth of base of hole at the diameter recorded in HDIA_DIAM	16.00
*	**HDIA_DIAM**	mm	0DP	Hole diameter	200
	HDIA_REM		X	Remarks	Cased to full depth
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS5

Group Notes

• HDIA describes the profile of final exploratory hole. Casing information for the final hole construction should be recorded in the CDIA group.

• HDIA_REM allows additional information on the hole construction to be included in the data file as necessary.

Group Name: HDPH - Depth Related Exploratory Hole Information					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**HDPH_TOP**	m	2DP	Depth to top of section	1.40
*	**HDPH_BASE**	m	2DP	Depth to base of section	3.40
*	**HDPH_TYPE**		PA	Type of depth related information	TP
	HDPH_STAR	yyyy-mm-ddThh:mm	DT	Date and time of start of section	2004-04-01T09:00
	HDPH_ENDD	yyyy-mm-ddThh:mm	DT	Date and time of end of section	2004-04-01T11:30
	HDPH_CREW		X	Name of rig/drill crew/operator	Bill Mallard
	HDPH_EXC		X	Plant used	JCB 3CX

Group Name: HDPH - Depth Related Exploratory Hole Information					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	HDPH_SHOR		X	Shoring/support used	None
	HDPH_STAB		X	Stability of trial pit / trial trench or logged traverse length	Stable during excavation
	HDPH_DIML	m	2DP	Trial pit / trial trench or logged traverse length	27.56
	HDPH_DIMW	m	2DP	Trial pit / trial trench or logged traverse width	1.35
	HDPH_DBIT		X	Drill bit used	Stepped ABC
	HDPH_BCON		X	Bit condition	Good
	HDPH_BTYP		X	Barrel type	Triple tube
	HDPH_BLEN	m	2DP	Barrel length	3.00
	HDPH_LOG		X	Definitive person responsible for logging the section	ANO
	HDPH_LOGD	yyyy-mm-dd	DT	Start date of hole section logging	2008-04-01
	HDPH_REM		X	Remarks	Breaker required
	HDPH_ENV		X	Details of weather and environmental conditions during hole section construction	Dry, rain, standing water
	HDPH_METH		X	Details of method of hole section construction	Odex
	HDPH_CONT		X	Drilling contractor	ACME Drilling Ltd
	FILE_FSET		X	Associated file reference (e.g. drilling journals, hole orientation data)	FS21

Group Notes

• HDPH is used to record information regarding exploratory hole construction. The HDPH group subdivides the hole development by depth such that the differing methods used to advance a hole or pit (or holes developed using combined methods) are explicitly described As a minimum, one record will exist in HDPH for each record in the LOCA group if the AGS file is transferring hole construction details.

• Records of orientation and inclination of the exploratory hole shall be included in the HORN group.

• Records in HDPH shall be continuous and non-overlapping.

• HDPH_LOG and HDPH_LOGD have been added to include the name of the person describing the strata in this section of the exploratory hole and date as required in BS EN ISO 14688-1 (Section 6) and BS EN ISO 14689 (Section 5). It is not deemed necessary to detail this information further for example in the GEOL group.

Group Name: HORN - Exploratory Hole Orientation and Inclination					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**HORN_TOP**	m	2DP	Depth to top of exploratory hole section	0.00
*	**HORN_BASE**	m	2DP	Depth to base of exploratory hole section	10.15
	HORN_ORNT	deg	0DP	Orientation of exploratory hole section or traverse (degrees from north)	210
	HORN_INCL	deg	0DP	Inclination of exploratory hole section or traverse (measured positively down from horizontal)	65
	HORN_REM		X	Remarks relating to orientation and inclination of hole section	
	FILE_FSET		X	Associated file reference (e.g. contract data specification)	FS22

Group Notes

• HORN is used to record the details of exploratory hole orientation and inclination.

Group Name: ICBR - In Situ California Bearing Ratio Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**ICBR_DPTH**	m	2DP	Depth to top of CBR test	0.50
*	**ICBR_TESN**		X	Test reference	2
	ICBR_ICBR	%	2SF	CBR value	1.2
	ICBR_MC	%	X	Water/moisture content relating to test	25
	ICBR_DATE	yyyy-mm-dd	DT	Test date	2003-03-20
	ICBR_KENT		X	Details of kentledge (reaction load)	2t Landrover
	ICBR_SEAT	N	0DP	Seating force	10
	ICBR_SURC	kPa	0DP	Surcharge pressure	15
	ICBR_TYPE		PA	Type of CBR	MEXECONE
	ICBR_REM		X	Remarks	Material >20mm below plunger, test terminated early, water ingress
	ICBR_ENV		X	Details of weather and environmental conditions during test	Sunny and frosty
	ICBR_METH		X	Test method	Manufacturer's instructions
	ICBR_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	ICBR_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000

Group Name: ICBR - In Situ California Bearing Ratio Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS25

Group Notes

• ICBR_TYPE allows a description or abbreviation to be included to categorise the equipment and method of measurement.
• ICBR_SEAT allows the plunger seating force to be included in the data as required.
• ICBR_SURC allows the surcharge pressure to be recorded and the description for the ICBR_REM heading has been modified.
• ICBR_CONT allows the name of a specialist sub-contracting organization to be credited with the testing.

Group Name: IDEN - In Situ Density Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**IDEN_DPTH**	m	2DP	Depth of in situ density test	1.25
*	**IDEN_TESN**		X	Test reference	2
	IDEN_DATE	yyyy-mm-dd	DT	Test date	2003-02-23
	IDEN_TYPE		PA	Type of density test performed	Core
	IDEN_IDEN	Mg/m3	2DP	In situ bulk density (after any calibration / corrections applied, i.e. reported value)	1.86
	IDEN_MC	%	X	Water/moisture content relating to in situ test (after any calibration / corrections applied, i.e. reported value)	18.0
	IDEN_STAB	%	2SF	Amount of stabiliser added	23
	IDEN_STYP		X	Type of stabiliser added	Cement
	IDEN_REM		X	Remarks	Uncorrected NDG values reported
	IDEN_ENV		X	Details of weather and environmental conditions during test	Cloudy and wet
	IDEN_METH		X	Test method	BS 1377-9:1990
	IDEN_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IDEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS25

Group Notes

• None.

Group Name: IFID - On Site Volatile Headspace Testing Using Flame Ionisation Detector					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**IFID_DPTH**	m	2DP	Depth of headspace test sample	1.00
*	**IFID_TESN**		X	Test reference	2
	IFID_DATE	yyyy-mm-dd	DT	Test date	2003-02-20
	IFID_RES	ppmv	XN	Result of FID analysis	10
	IFID_REM		X	Remarks on test	
	IFID_ENV		X	Details of weather and environmental conditions during test	Misty
	IFID_METH		X	Details of FID used and method description	Flame ionisation detector
	IFID_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IFID_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS23

Group Rules

• IFID_RES shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

Group Notes

• IFID is used to record the results of on-site volatile testing by means of headspace analysis using flame ionisation detectors.

• IFID_CRED added to permit details of any test accreditation if appropriate to be included in data.

Group Name: IPEN - In Situ Hand Penetrometer Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**IPEN_DPTH**	m	2DP	Depth of test	13.50
*	**IPEN_TESN**		X	Test reference	2
	IPEN_IPEN	kPa	XN	Hand penetrometer result	6.8 or >20
	IPEN_DATE	yyyy-mm-dd	DT	Test date	2003-02-28
	IPEN_REM		X	Remarks on test	
	IPEN_ENV		X	Details of weather and environmental conditions during test	Dry and warm
	IPEN_METH		X	Test method	BS 1377-9:1990
	IPEN_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IPEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

Group Rules

• IPEN_IPEN shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

Group Notes

• None

Group Name: IPID - On Site Volatile Headspace Testing by Photo Ionisation Detector					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**IPID_DPTH**	m	2DP	Depth of headspace test sample	1.00
*	**IPID_TESN**		X	Test reference	3
	IPID_DATE	yyyy-mm-dd	DT	Test date	2003-02-20
	IPID_TEMP	DegC	1DP	Ambient temperature at time of test	15.1
	IPID_RES	ppmv	XN	Result of PID analysis	10.00
	IPID_REM		X	Remarks on test	
	IPID_ENV		X	Details of weather and environmental conditions during test	Cloudy with light rain

Group Name: IPID - On Site Volatile Headspace Testing by Photo Ionisation Detector					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	IPID_METH		X	Details of PID used and method description	Carried out on temporary samples using photo ionisation detector fitted with 10.6 eV lamp
	IPID_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IPID_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS45

Group Rules

• IPID_RES shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

Group Notes

• IPID is used to record the results of on-site volatile testing by means of headspace analysis using photo ionisation detectors.

• IPID_CRED added to permit details of any test accreditation if appropriate to be included in data.

• Clause 7.9.8 of the updated SISG Specification advises ambient weather and temperature to be recorded at time of test. IPID_ENV and IPID_TEMP added to include this information.

~~Group Name: IPRG - In Situ Permeability Tests - General~~					
~~**Status**~~	~~**Heading**~~	~~**Suggested Unit / Type**~~		~~**Description**~~	~~**Example**~~
~~*~~	~~**LOCA_ID**~~		~~ID~~	~~Location identifier~~	~~327-16A~~
~~*~~	~~**IPRG_TOP**~~	~~m~~	~~2DP~~	~~Depth to top of test zone~~	~~12.20~~
~~*~~	~~**IPRG_TESN**~~		~~X~~	~~Test reference~~	~~2~~
~~*~~	~~**IPRG_BASE**~~	~~m~~	~~2DP~~	~~Depth to base of test zone~~	~~12.95~~
~~*~~	~~**IPRG_STG**~~		~~0DP~~	~~Stage number of multistage test~~	~~1~~
	~~**IPRG_TYPE**~~		~~PA~~	~~Type of test~~	~~Constant Head~~
	~~**IPRG_PRWL**~~	~~m~~	~~2DP~~	~~Depth to water in test zone immediately prior to test~~	~~10.60~~
	~~**IPRG_SWAL**~~	~~m~~	~~2DP~~	~~Depth to water at start of test~~	~~5.40~~
	~~**IPRG_TDIA**~~	~~m~~	~~2DP~~	~~Diameter of test zone~~	~~0.15~~
	~~**IPRG_SDIA**~~	~~m~~	~~3DP~~	~~Diameter of test installation (e.g. standpipe or casing)~~	~~0.019~~
	~~**IPRG_IPRM**~~	~~m/s~~	~~1SCI~~	~~Permeability~~	~~5.1E-9~~
	~~**IPRG_FLOW**~~	~~l/s~~	~~1DP~~	~~Average flow during test stage~~	~~2.3~~
	~~**IPRG_AWL**~~	~~m~~	~~2DP~~	~~Depth to assumed standing water level~~	~~10.00~~

Group Name: IPRG - In Situ Permeability Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
	IPRG_HEAD	m	2DP	Applied total head of water during test stage at centre of test zone	20.50
	IPRG_DATE	yyyy-mm-dd	DT	Test date	2008-01-23
	IPRG_REM		X	Test remarks	
	IPRG_ENV		X	Details of weather and environmental conditions during test	Sunny and warm
	IPRG_METH		X	Test method	BS 5930
	IPRG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IPRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

Group Notes

• None.

Group Name: IPRT - In Situ Permeability Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IPRG_TOP	m	2DP	Depth to top of test zone	12.20
*	IPRG_TESN		X	Test reference	2
*	IPRG_BASE	m	2DP	Depth to base of test zone	12.95
*	IPRG_STG		0DP	Stage number of multistage packer test	1
*	IPRT_TIME	hh:mm:ss	T	Elapsed time	00:12:00
	IPRT_DPTH	m	2DP	Depth to water at time IPRT_TIME	2.45
	IPRT_REM		X	Test reading remark	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS26

Group Notes

• The IPRT group allows for transfer of the water level with time readings taken during the test where this is required in the test specification.

Group Name: IRDX - In Situ Redox Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**IRDX_DPTH**	m	2DP	Depth of redox test	1.00
*	**IRDX_TESN**		X	Test reference	2
	IRDX_DATE	yyyy-mm-dd	DT	Test date	2003-02-04
	IRDX_PH		1DP	pH	7.0
	IRDX_MPOT		0DP	Mean value of the potential of the two platinum probes	-50
	IRDX_IRDX	mV	0DP	Redox potential	400
	IRDX_REM		X	Details of redox test and probe type	
	IRDX_ENV		X	Details of weather and environmental conditions during test	Cloudy with light rain
	IRDX_METH		X	Test method	
	IRDX_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IRDX_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS26

Group Notes

• None.

Group Name: IRES - In Situ Resistivity Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**IRES_DPTH**	m	2DP	Depth to which in situ resistivity test relates	1.00
*	**IRES_TESN**		X	Test reference	1
	IRES_BASE	m	2DP	Base depth to which in-situ resistivity test relates	2.00
	IRES_TYPE		PA	Type of resistivity test	SCHL
	IRES_DATE	yyyy-mm-dd	DT	Test date	2003-03-20
	IRES_IRES	ohm m	2SF	Mean value of the apparent resistivity	2500
	IRES_RES1	ohm m	2SF	First value of apparent resistivity when more than 15% different to mean	30

Group Name: IRES - In Situ Resistivity Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	IRES_RES2	ohm m	2SF	Second value of apparent resistivity when more than 15% different to mean	10
	IRES_REM		X	Details of test e.g. electrode spacing and configuration	
	IRES_ENV		X	Details of weather and environmental conditions during test	Misty and cold
	IRES_METH		X	Test method	BS 1377-9:1990
	IRES_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IRES_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS26

Group Notes

• None.

Group Name: ISAG - Soakaway Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**ISAG_TESN**		X	Test reference	1
	ISAG_DATE	yyyy-mm-dd	DT	Test date	2010-02-28
	ISAG_DURN	hh:mm	T	Test duration	00:35
	ISAG_PWID	m	2DP	Soakaway pit width	2.00
	ISAG_PLEN	m	2DP	Soakaway pit length	1.00
	ISAG_PDIA	m	2DP	Soakaway pit diameter	1.50
	ISAG_DPTS	m	2DP	Soakaway pit depth at start of test	1.55
	ISAG_DPTE	m	2DP	Soakaway pit depth at end of test	1.55
	ISAG_CONS		X	Description of soakaway construction	Vertical sides trimmed square with granular fill and observation tube
	ISAG_SI		2SCI	Soil infiltration rate	6.80E-6
	ISAG_PORO	%	0DP	Fill porosity	10
	ISAG_REM		X	Remarks	Unable to calculate infiltration rate. No fall in water level during test period.
	ISAG_ENV		X	Details of weather and environmental conditions during test	Raining

Group Name: ISAG - Soakaway Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	ISAG_METH		X	Test method	BRE Digest 365
	ISAG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	ISAG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11
	ISAG_OPER		X	Name of operator carrying out test	

Group Notes

• None.

Group Name: ISAT - Soakaway Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**ISAG_TESN**		X	Test reference	1
*	**ISAT_TIME**	hh:mm:ss	T	Elapsed time	05:00:02
	ISAT_DPTH	m	2DP	Depth to water	0.18
	ISAT_REM		X	Remark relating to test reading	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

Group Notes

• None.

Group Name: ISPT - Standard Penetration Test Results					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**ISPT_TOP**	m	2DP	Depth to top of test	13.50
	ISPT_SEAT		0DP	Number of blows for seating drive	14
	ISPT_MAIN		0DP	Number of blows for main test drive	35
	ISPT_NPEN	mm	0DP	Total penetration for seating drive and test drive	450
	ISPT_NVAL		0DP	SPT 'N' value	35
	ISPT_REP		X	SPT reported result	6,8/8,9,9,9 N=35

Group Name: ISPT - Standard Penetration Test Results					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	ISPT_CAS	m	2DP	Casing depth at time of test	12.00
	ISPT_WAT	m	XN	Depth to water at time of test	2.50 or Dry
	ISPT_TYPE		PA	Type of SPT test	S
	ISPT_HAM		X	Hammer serial number from manufacturer	AB1234
	ISPT_ERAT	%	0DP	Energy ratio of the hammer	60
	ISPT_SWP	mm	0DP	Self-weight penetration	25
	ISPT_INC1		0DP	Number of blows for 1st Increment (Seating)	6
	ISPT_INC2		0DP	Number of blows for 2nd Increment (Seating)	8
	ISPT_INC3		0DP	Number of blows for 1st Increment (Test)	8
	ISPT_INC4		0DP	Number of blows for 2nd Increment (Test)	9
	ISPT_INC5		0DP	Number of blows for 3rd Increment (Test)	9
	ISPT_INC6		0DP	Number of blows for 4th Increment (Test)	9
	ISPT_PEN1	mm	0DP	Penetration for 1st Increment (Seating Drive)	75
	ISPT_PEN2	mm	0DP	Penetration for 2nd Increment (Seating Drive)	75
	ISPT_PEN3	mm	0DP	Penetration for 1st Increment (Test)	75
	ISPT_PEN4	mm	0DP	Penetration for 2nd Increment (Test)	75
	ISPT_PEN5	mm	0DP	Penetration for 3rd Increment (Test)	75
	ISPT_PEN6	mm	0DP	Penetration for 4th Increment (Test)	75
	ISPT_ROCK		YN	SPT carried out in soft rock	N
	ISPT_REM		X	Remarks	Borehole topped up with water prior to test
	ISPT_ENV		X	Details of weather and environmental conditions during test	Raining
	ISPT_METH		X	Test method	BS EN ISO 22476-3 : 2005
	ISPT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	ISPT_N60		0DP	SPT 'N' value (corrected by energy ratio ISPT_ERAT)	35

Group Rules

• If the test was extended to 100 blows (as described in ISO 22476-3), the data variable under ISPT_ROCK shall be 'Y'. To avoid ambiguity, in cases where the test was not extended the ISPT_ROCK data shall be 'N'.

Group Notes

• Where appropriate or requested, SPT equipment calibration certificates could be referred to in FILE_FSET.

Group Name: IVAN - In Situ Vane Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**IVAN_DPTH**	m	2DP	Depth of vane test	13.50
*	**IVAN_TESN**		X	Test reference	2
	IVAN_TYPE		PA	Vane type	BOREHOLE
	IVAN_IVAN	kPa	XN	Vane test result	60 or >80
	IVAN_IVAR	kPa	XN	Vane test residual result	45 or >80
	IVAN_DATE	yyyy-mm-dd	DT	Test date	2003-02-28
	IVAN_REM		X	Details of vane test, vane size	
	IVAN_ENV		X	Details of weather and environmental conditions during test	Dry and warm
	IVAN_METH		X	Test method	BS 1377-6:1990
	IVAN_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IVAN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

Group Rules

• IVAN_IVAN and IVAN_IVAR data shall generally be numeric. A text form can only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

Group Notes

• IVAN_ENV allows records of environmental conditions to be recorded. Where the test is down hole this field should be left empty as this has no bearing on the measurement made.

Group Name: LBSG - Testing Schedule					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LBSG_REF**		X	Schedule reference	2
	LBSG_DATE	yyyy-mm-dd	DT	Date of issue	2009-01-31
	LBSG_FROM		X	Schedule prepared by	ACME Consulting
	LBSG_TO		X	Schedule issued to	ACME Laboratories plc
	LBSG_DUE	yyyy-mm-dd	DT	Date schedule to be completed and reported	2009-04-01
	LBSG_REM		X	Comments on schedule	
	LBSG_STAT		X	Status of schedule	Complete
	FILE_FSET		X	Associated file reference (e.g. schedule sheets)	FS1

Group Notes

• The LBSG group is used to describe the testing schedules generated on a project.

• One data row in this group represents the issue of one schedule to a laboratory or testing organization.

• Any general requirements for the test schedule, for example, dates for completion, contact details, should be included in this group. Details of the test required are provided in the LBST group against the samples.

Group Name: LBST - Testing Schedule Details					
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
*	**LBSG_REF**		X	Testing schedule reference	2
*	**LBST_TEST**		X	Test Name	Suite A
	CHOC_REF		X	Chain of custody reference	A1241/1
	LBST_TTYP		X	Full test method or standard	California Bearing Ratio (BS 1377:1990:Pt 4, Section 7)
	LBST_METH		X	Method and test parameters	Point, 34 kPa surcharge.
	LBST_PREP		X	Preparation requirements	BS1377 part 9
	LBST_DEPN		X	Dependent test options	Advise if sample insufficient for testing
	LBST_STAT		PA	Status of laboratory test	IN PROGRESS
	LBST_REM		X	Remarks	
	LBST_DUE	yyyy-mm-dd	DT	Test results due date	2009-10-05
	LBST_DETL		X	Details of testing carried out or reasons for no testing possible	

Group Name: LBST - Testing Schedule Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LBST_DONE	yyyy-mm-dd	DT	Date test completed	2009-10-01
	FILE_FSET		X	Associated file reference	FS99

Group Notes

• The LBST group is used to describe instructions and requirements to be passed to the laboratory regarding testing on samples.

• Each data row represents a test on a sample. Therefore sample details will be repeated for each test scheduled on that sample.

• LBSG_REF provides the link between the test and the test schedule details.

• LBST_TEST is the specific code or name of the particular test required on the sample. Whilst these will be drawn from standards, the test names are typically unique to laboratories or maybe linked to a particular contract specification. At the outset of scheduling testing the list of test names that are particular to a project or contract should ascertained and used as a pick-list in any information system generating LBST data. It is envisaged that laboratories or contract specifications can provide coded lists for test details that would be suitable for LBST_TEST data.

• The headings of LBST_TTYP, LBST_METH, LBST_PREP, LBST_DEPN allow for descriptions of the test name/method or standard, specific method details or test parameters, test specimen preparation and dependent options or comments. For any test some or all of these data items may be required to fully define the test. An example of the type of information that could be included under these headings could be:

LBST_TEST = “CBR”

LBST_TTYP = “California Bearing Ratio. BS1377 : 1990 : Part 4 , Section 7”

LBST_METH = “Top and Base. Surcharge mass 100 kPa”

LBST_PREP = “Recompacted (see Remarks for compaction details), Soaked”

LBST_DEPN = “Advise if sample unsuitable”

• The group also includes headings that can be used by the testing laboratory to report testing progress or highlight problems with carrying out the instructed testing; LBST_STAT, LBST_DETL and LBST_DONE. If data is provided under these headings to the organization that schedules the tests, they can use the information to track progress and monitor completion

• LBST_STAT is used to describe the status of testing. Typically this would include standard phrases rather than detailed descriptions such as ‘Scheduled’, ‘Restricted’, ‘In progress’, ‘Completed’.

• Details of testing restrictions, for example insufficient or unsuitable sample, should be included under LBST_DETL. The transfer of LBST could provide a suitable method for laboratories to advise on testing restrictions, for example, returning a file containing all LBST records with an LBST_STAT of ‘Restricted’.

Group Name: LDEN - Density Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions

Group Name: LDEN - Density Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LDEN_TYPE		PA	Type of test performed	LINEAR
	LDEN_COND		PA	Sample condition	UNDISTURBED
	LDEN_SMTY		PA	Type of sample	BLOCK SAMPLE
	LDEN_MC	%	X	Water/moisture content	57
	LDEN_BDEN	Mg/m3	2DP	Bulk density	1.66
	LDEN_DDEN	Mg/m3	2DP	Dry density	1.06
	LDEN_REM		X	Remarks	
	LDEN_METH		X	Test method	BS1377: Part 2: 1990: Clause 7.2
	LDEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LDEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LDEN_DEV		X	Specimen size if less than 50cm3 and any deviation from the specified procedure	37cm3

Group Notes

• Measurements of density on rock materials should be reported in RDEN.

Group Name: LDYN - Dynamic Testing					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LDYN_PWAV	m/s	0DP	P-wave velocity	3000
	LDYN_SWAV	m/s	0DP	S-wave velocity	1800
	LDYN_EMOD	GPa	0DP	Dynamic elastic modulus	20

Group Name: LDYN - Dynamic Testing					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LDYN_SG	GPa	0DP	Shear modulus derived from LDYN_SWAV	8
	LDYN_REM		X	Remarks	
	LDYN_METH		X	Test method	ISRM: Suggested method
	LDYN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LDYN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LDYN_DEV		X	Deviation from the specified procedure	

Group Notes

• LDYN is to be used to report dynamic testing on soil and rock materials.

• The measurements of bulk density, dry density, water/moisture content, porosity and saturation that described the test specimen condition related to these tests should be recorded in RDEN.

Group Name: LFCN – Laboratory Fall Cone Test					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LFCN_DEV		X	Deviations from the procedure	
	LFCN_CMAS	g	0DP	Mass of cone used	60
	LFCN_CANG	deg	0DP	Angle of cone tip	60
	LFCN_PENA	mm	2DP	Average cone penetration	4.25

Group Name: LFCN – Laboratory Fall Cone Test					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LFCN_PEN1	mm	2DP	Individual penetration point 1 if values differ by more than 0.5mm from the average, for undisturbed tests.	4.50
	LFCN_PEN2	mm	2DP	Individual penetration point 2 if values differ by more than 0.5mm from the average, for undisturbed tests.	4.25
	LFCN_PEN3	mm	2DP	Individual penetration point 3 if values differ by more than 0.5mm from the average, for undisturbed tests.	5.00
	LFCN_PEN4	mm	2DP	Individual penetration point 4 if values differ by more than 0.5mm from the average, for undisturbed tests.	4.00
	LFCN_CONF		YN	Non-conforming test (due to penetration range)	Y
	LFCN_FCPK	kPa	2SF	Estimated undrained fall cone shear strength	8.8
	LFCN_FCRM	kPa	2SF	Estimated undrained fall cone shear strength, remoulded	5.2
	LFCN_WC	%	X	Water content of specimen	16.2
	LFCN_WCST		X	Water content determined on specimen trimmings or other if applicable.	Water content from specimen trimmings
	LFCN_REM		X	Test remarks	
	LFCN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LFCN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7

Group Notes

• None

Group Name: LLIN - Linear Shrinkage Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55

Group Name: LLIN - Linear Shrinkage Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Specimen prepared by cone and quartering
	LLIN_LS	%	0DP	Linear shrinkage	11
	LLIN_425	%	0DP	Percentage passing 425µm sieve	12
	LLIN_PREP		X	Method of preparation	Wet sieve
	LLIN_REM		X	Remarks	
	LLIN_METH		X	Test method	BS1377: Part 2: 1990: Clause 6.5
	LLIN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LLIN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LLIN_DEV		X	Deviation from the specified procedure	

Group Notes

• The LLIN group is included to transfer linear shrinkage tests. Shrinkage limit is to be transferred using the LSLT group.

Group Name: LLPL - Liquid and Plastic Limit Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LLPL_LL	%	0DP	Liquid limit	62
	LLPL_PL	%	XN	Plastic limit	38 or NP
	LLPL_PI		0DP	Plasticity Index	23

Group Name: LLPL - Liquid and Plastic Limit Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LLPL_425	%	0DP	Percentage passing 425µm sieve	12
	LLPL_PREP		X	Method of preparation	Wet sieve
	LLPL_STAB	%	2SF	Amount of stabiliser added	23
	LLPL_STYP		X	Type of stabiliser added	Cement
	LLPL_REM		X	Remarks	1 point liquid limit test
	LLPL_METH		X	Test method	BS1377: Part 2: 1990: Clause 4.4 and 5
	LLPL_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LLPL_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LLPL_DEV		X	Deviation from the specified procedure	
	LLPL_TYPE		PA	Type of test.	FALL CONE
	LLPL_POIN		PA	Number of points.	FOUR
	LLPL_CONE		PA	For fall cone method, type of cone.	60g/60deg
	LLPL_1PRE	mm	1DP	Mean of test readings, if one-point test.	19.1
	LLPL_1PCF		3DP	Correlation factor if one-point test.	1.015
	LLPL_SIZE	mm	U	Sieve size if other than 0.425mm	0.4
	LLPL_PASS	%	2SF	Percentage passing LLPL_SIZE sieve if other than 0.425mm	98
	LLPL_WC	%	X	The water content of the specimen before removal of particles prior to determination liquid or plastic limits, if measured	21.3

Group Notes

• None

Group Name: LNMC - Water/moisture Content Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LNMC_MC	%	X	Water/moisture content	57
	LNMC_TEMP	DegC	0DP	Temperature sample dried at	105
	LNMC_STAB	%	2SF	Amount of stabiliser added	23
	LNMC_STYP		X	Type of stabiliser added	Cement
	LNMC_ISNT		YN	Is test result assumed to be a natural water/moisture content	Y
	LNMC_COMM		X	Reason water/moisture content is assumed to be other than natural	
	LNMC_REM		X	Remarks	
	LNMC_METH		X	Test method	BS1377: Part 2: 1990: Clause 3.2
	LNMC_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LNMC_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LNMC_DEV		X	Deviation from the specified procedure	

Group Notes

• This group shall be for water (moisture) content tests (usually synonymous with 'as received') carried out as individual or separate tests. Where a water content is measured as part of another test (e.g. a triaxial test), the water content shall be transferred in that group under the appropriate heading.

• Water/moisture content corrected for material >425um and fluid content are not included as automatic headings. Apart from being very rarely used (in the UK), these are usually dependent upon assumptions about representativity, water content retention in coarse material or salt content in pore water. It is better left to the recipient of the data to interpret these other parameters which are not specified requirements of water content (or index) standards. It could be argued that if fluid content were to be included here, it should also be in all tests with water content.

Group Name: LOCA - Location Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
	LOCA_TYPE		PA	Type of activity	CP+RC
	LOCA_STAT		PA	Status of information relating to this position	PRELIM
	LOCA_NATE	m	2DP	National Grid Easting of location or start of traverse	523145.00
	LOCA_NATN	m	2DP	National Grid Northing of location or start of traverse	178456.12
	LOCA_GREF		PA	National grid referencing system used	OSGB
	LOCA_GL	m	2DP	Ground level relative to datum of location or start of traverse	16.23
	LOCA_REM		X	General remarks	
	LOCA_FDEP	m	2DP	Final depth	32.60
	LOCA_STAR	yyyy-mm-dd	DT	Date of start of activity	1991-03-18
	LOCA_PURP		X	Purpose of activity at this location	Groundwater observation well
	LOCA_TERM		X	Reason for activity termination	Abandoned on engineer's instruction
	LOCA_ENDD	yyyy-mm-dd	DT	End date of activity	1991-03-22
	LOCA_LETT		X	OSGB letter grid reference	TQ231784
	LOCA_LOCX	m	2DP	Local grid x co-ordinate or start of traverse	565.23
	LOCA_LOCY	m	2DP	Local grid y co-ordinate or start of traverse	421.12
	LOCA_LOCZ	m	2DP	Level or start of traverse to local datum	106.63
	LOCA_LREF		X	Local grid referencing system used	London grid 1
	LOCA_DATM		X	Local datum referencing system used	Anytown datum
	LOCA_ETRV	m	2DP	National Grid Easting of end of traverse	523195.12
	LOCA_NTRV	m	2DP	National Grid Northing of end of traverse	178486.12
	LOCA_LTRV	m	2DP	Ground level relative to datum of end of traverse	9.67
	LOCA_XTRL	m	2DP	Local grid easting of end of traverse	523195.12
	LOCA_YTRL	m	2DP	Local grid northing of end of traverse	178486.12
	LOCA_ZTRL	m	2DP	Local elevation of end of traverse	9.67
	LOCA_LAT		DMS	Latitude of location or start of traverse	51:28:52.498
	LOCA_LON		DMS	Longitude of location or start of traverse	34:10:34.23
	LOCA_ELAT		DMS	Latitude of end of traverse	51:28:52.550
	LOCA_ELON		DMS	Longitude of end of traverse	34:10:34.23
	LOCA_LLZ		X	Projection Format	WGS84

Group Name: LOCA - Location Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LOCA_LOCM		X	Method of location	dGPS
	LOCA_LOCA		X	Site location sub division (within project) code or description	Sub-station 1
	LOCA_CLST		X	Investigation phase grouping code or description	Phase 2a
	LOCA_ALID		X	Alignment Identifier	Tunnel Alignment P
	LOCA_OFFS		2DP	Offset	10.35
	LOCA_CNGE		X	Chainage	500+123.23
	LOCA_TRAN		X	Reference to or details of algorithm used to calculate local grid reference, local ground levels or chainage	Coordinate transforms document ref 100-23-A, dated 16 April 2010
	FILE_FSET		X	Associated file reference (e.g. boring or pitting instructions, location photographs)	FS2
	LOCA_NATD		X	National Datum Referencing System used	OD Newlyn
	LOCA_ORID		X	Original Hole ID	BH1
	LOCA_ORJO		X	Original Job Reference	ABC1985
	LOCA_ORCO		X	Originating Company	ABC Labs

Group Rules

• For the transfer of proposed exploratory locations, the designer shall use the LOCA group with LOCA_STAT = 'PROPOSED', noting that the LOCA group does not accommodate both proposed and as-built data for a single position (such as co-ordinates), this is considered a data management issue.

Group Notes

• LOCA is used to transfer the spatial location of all exploratory locations where data has been recorded. This includes the location of exploratory holes, sampling points or other locations where an observation / test has been made, or a sample / measurement taken.

• The LOCA_TYPE code is used to categorise the type of activity that has occurred at the location.

• The details of exploratory hole construction are contained in the HDPH group. If LOCA_TYPE codes are used that represent the type of exploratory hole construction then they must be correlated with the code or combinations of codes in HDPH_TYPE. Alternatively the code 'EH' could be used to represent an Exploratory Hole the details of which are contained in HDPH.

• If the AGS data file includes information on construction items, then LOCA would also include references to these locations.

• LOCA_ID must be unique for the project and should be unique for the site to allow for consolidation of data. Consideration of this needs to be made at the outset of the project. Typically the consulting engineer or designer allows for this in specifying hole or location identifiers.

• LOCA_FDEP will generally be null for location points other than exploratory holes, pits, piles or other below ground constructed elements.

• Two headings, LOCA_LOCA and LOCA_CLST, provide a heading for tags of hole groupings. These groupings would typically be specified by the Investigation Supervisor/Designer rather than the Ground Investigation Contractor. LOCA_LOCA should be used to define the grouping of a hole by site location, whereas LOCA_CLST is typically used to indicate investigation phase. If codes are used to define these location or phase data, then the codes shall be defined in the ABBR group.

• LOCA_OFFS, LOCA_CNGE and LOCA_ALID allow location data to be presented by chainage and offset to an alignment as typically used for location on road and rail projects. The data included in these headings will probably be expressed in project related units. For example, offset can be defined as positive or negative (e.g. +10 or -12). Chainage on UK railway projects may well be expressed in miles and chains (e.g. 10 mi 1 ch).

Group Name: LPDN - Particle Density Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LPDN_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	LPDN_TYPE		PA	Type of test	SMALL PYK
	LPDN_REM		X	Remarks	Test on material <2mm only
	LPDN_METH		X	Test method	BS1377: Part 2: 1990: Clause 8.3
	LPDN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LPDN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LPDN_DEV		X	Any deviation from the specified test procedure, and any other information that could be important for interpreting the test results.	Sample crushed prior to test.
	LPDN_PVOL	ml	0DP	Pycnometer volume if used and not 50ml	52
	LPDN_GAS		PA	Identity of gas if gas pycnometer used	Helium

Group Notes

• None

Group Name: LPEN - Laboratory Hand Penetrometer Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LPEN_PPEN	kPa	0DP	Hand penetrometer undrained shear strength	40
	LPEN_MC	%	X	Water/moisture content local to test, if measured	23.7
	LPEN_REM		X	Remarks	Gravel present
	LPEN_METH		X	Test method	Manufacturers instructions
	LPEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LPEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LPEN_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: LRES - Laboratory Resistivity Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a

Group Name: LRES - Laboratory Resistivity Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LRES_BDEN	Mg/m3	2DP	Bulk density	2.12
	LRES_DDEN	Mg/m3	2DP	Dry density	1.84
	LRES_MC	%	X	Water/moisture content	15.2
	LRES_COND		X	Sample condition including details of remoulding	Remoulded
	LRES_LRES	ohm m	0DP	Temperature corrected (20 DegC) resistivity	45
	LRES_CDIA	mm	0DP	Diameter of container	450
	LRES_CCSA	mm2	0DP	Container cross-sectional area	25000
	LRES_CLEN	mm	0DP	Length of container	100
	LRES_TEMP	DegC	0DP	Temperature at which test performed	22
	LRES_ELEC		X	Type of electrodes including material	Steel discs
	LRES_PENT		X	Dimensions of probes, diameter, spacing, penetration into the soil specimen and whether inserted into ends or side	15mm diameter probes 100mm penetrating 75mm into test specimen
	LRES_CSHP		X	Shape of container	Cylinder
	LRES_WAT	ml	0DP	Volume of water required to saturate the soil	750
	LRES_WRES	ohm m	3SF	Water resistivity	0.690
	LRES_PART		X	Approximate percentage of large particles removed prior to test	None
	LRES_REM		X	Remarks	
	LRES_METH		X	Test method	
	LRES_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LRES_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LRES_DEV		X	Deviation from the specified procedure	

Group Notes

• The water conductivity LRES_WCND may be included from relevant testing. For tests with natural water content values may come from suitable water collected in boreholes or, where water is added, a combination of in situ values and those of the added water.

• The method used including the container shape (LRES_CSHP) and test geometry (LRES_PENT) should be included.

Group Name: LSLT - Shrinkage Limit Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LSLT_SLIM	%	2SF	Shrinkage limit	17
	LSLT_SHRA		0DP	Shrinkage ratio	
	LSLT_IDEN	Mg/m3	2DP	Initial density	1.66
	LSLT_MCI	%	X	Initial water/moisture content of test specimen	20
	LSLT_425	%	0DP	Percentage passing 425µm sieve	12
	LSLT_REM		X	Remarks	
	LSLT_METH		X	Test method	ASTM D4943:2018
	LSLT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LSLT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LSLT_DEV		X	Deviation from the specified procedure	

Group Notes

• Group LSLT is to be used to report shrinkage limit tests on soils.

• The LLIN group is to be used to report linear shrinkage tests.

Group Name: LSTG - Initial Consumption of Lime Tests - General					
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

Group Name: LSTG - Initial Consumption of Lime Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**SAMP_TYPE**		PA	Sample type	U
*	**SAMP_ID**		ID	Sample unique identifier	ABC121415010
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LSTG_ICL	%	2SF	Initial consumption of lime	4.4
	LSTG_PH		1DP	pH value used for interpretation of LSTG_ICL	12.6
	LSTG_LIME		X	Details of lime used for test	Laboratory grade Calcium Hydroxide
	LSTG_SUIT		1DP	pH of saturated lime solution (suitability)	12.4
	LSTG_425	%	2SF	Percentage of soil passing 425µm sieve	82
	LSTG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	
	LSTG_METH		X	Test method	
	LSTG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LSTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS15
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LSTG_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: LSTT - Initial Consumption of Lime Tests - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**LSTT_TESN**		X	Test reference	1
	LSTT_LCON	%	1DP	Percentage of lime added	2.5
	LSTT_PH		1DP	pH of lime/soil suspension	12.4
	LSTT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS15

Group Notes

• None

Group Name: LSWL - Swelling Index Testing					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LSWL_SWPR	kPa	0DP	Swelling Pressure Index	50
	LSWL_SWSI	%	1DP	Swelling Strain Index	0.5
	LSWL_MCI	%	1DP	Initial water content of test specimen	5.6
	LSWL_SDIA	mm	1DP	Specimen diameter	63.2
	LSWL_THCK	mm	1DP	Specimen thickness	50.1
	LSWL_BDEN	kg/m3	0DP	Initial bulk density	2240
	LSWL_DDEN	kg/m3	0DP	Initial dry density	1870

Group Name: LSWL - Swelling Index Testing					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LSWL_REM		X	Remarks	
	LSWL_METH		X	Test method	ISRM: Suggested method
	LSWL_LAB		X	Name of testing laboratory/ organization	ACME Laboratories plc
	LSWL_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	
	LSWL_DEV		X	Deviation from the specified procedure	

Group Notes

• The LSWL group should be used for swelling tests on both soil and rock materials.

Group Name: LTCH - Laboratory Thermal Conductivity					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description following the principles in ISO 14688-1	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LTCH_COND		X	Sample condition	UNDISTURBED
	LTCH_BDEN	Mg/m3	2DP	Bulk density	2.12
	LTCH_DDEN	Mg/m3	2DP	Dry density	1.84
	LTCH_MC	%	X	Water/moisture Content	57
	LTCH_TCON	W/(K-m)	2DP	Thermal Conductivity	3.21
	LTCH_TRES	(K-m)/W	2DP	Thermal Resistivity	0.75
	LTCH_TEMP	DegC	0DP	Ambient temperature at which test is performed	22

Group Name: LTCH - Laboratory Thermal Conductivity					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LTCH_PDIA	mm	0DP	Probe diameter	15
	LTCH_PSPA	mm	0DP	Probe spacing	100
	LTCH_PPEN	mm	0DP	Probe penetration	75
	LTCH_PRBE		X	Method of probe insertion	Pushed, pre-drilled
	LTCH_PART		X	Particle grain size removed	>2mm
	LTCH_DEV		X	Deviation from the procedure	
	LTCH_REM		X	Remarks	
	LTCH_METH		X	Test method	BS EN ISO 17892-7:2018
	LTCH_LAB		X	Name of testing laboratory/ organization	ACME Laboratories plc
	LTCH_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7

Group Notes

• None

Group Name: LUCT - Laboratory Unconfined Compression Test					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LUCT_DEV		X	Deviation from the procedure	
	LUCT_TYPE		PA	Test type	UNDISTURBED
	LUCT_DIA	mm	2DP	Specimen diameter	38.25
	LUCT_SLEN	mm	2DP	Specimen length	76.45
	LUCT_IWC	%	X	Specimen initial water content	15.7

Group Name: LUCT - Laboratory Unconfined Compression Test					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LUCT_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	LUCT_DDEN	Mg/m3	2DP	Initial dry density	1.84
	LUCT_RATE	%/min	2SF	Mean rate of compression	1.2
	LUCT_UCS	kPa	0DP	Unconfined compressive strength	121
	LUCT_STRA	%	1DP	Strain at failure	11.2
	LUCT_MODE		PA	Mode of failure	Brittle
	LUCT_REM		X	Remarks	
	LUCT_METH		X	Test method	BS EN ISO 17892-7:2018
	LUCT_LAB		X	Name of testing laboratory/ organization	ACME Laboratories plc
	LUCT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7

Group Notes

• This group is for soil testing (ISO). Please refer to the RUCS group for reporting rock UCS testing (ISRM or ASTM).

Group Name: LVAN - Laboratory Vane Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LVAN_VNPK	kPa	XN	Vane undrained shear strength (peak)	35
	LVAN_VNRM	kPa	XN	Vane undrained shear strength (remoulded)	25
	LVAN_MC	%	X	Water/moisture content local to the test	57.9
	LVAN_SIZE	mm	1DP	Equivalent diameter of vane	12.7

Group Name: LVAN - Laboratory Vane Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	LVAN_VLEN	mm	1DP	Length of vane	12.7
	LVAN_REM		X	Remarks	Test performed in U100, test on CBR specimen
	LVAN_METH		X	Test method, including type of vane	Pilcon Hand vane BS1377: Part 7: Clause 3 Laboratory vane
	LVAN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LVAN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LVAN_DEV		X	Deviation from the specified procedure	
	LVAN_TYPE		PA	Vane type	HV

Group Rules

• LVAN_VNPK and LVAN_VNRM shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

Group Notes

Group Name: MCVG - MCV Tests - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Stored at constant water/moisture content for 7 days, then soaked for 7 days, maintained at 20±2°C throughout
	MCVG_200	%	0DP	Weight percent of sample retained on 20 mm sieve	15

Group Name: MCVG - MCV Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	MCVG_NMC	%	X	Natural water/moisture content below 20 mm	21
	MCVG_STAB	%	2SF	Amount of stabiliser added	23
	MCVG_STYP		X	Type of stabiliser added	Cement
	MCVG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	
	MCVG_METH		X	Test method	BS1377 Part 4, cl 5.4, 5.5 or 5.6
	MCVG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	MCVG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS15
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	MCVG_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: MCVT - MCV Tests - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**MCVT_TESN**		X	Test reference	1
	MCVT_MC	%	X	Water/moisture content for MCVT_TESN	17.7
	MCVT_CURV		X	Method of interpretation of the test curve	Steepest straight line
	MCVT_RELK		1DP	MCV value for MCVT_TESN	12.3
	MCVT_BDEN	Mg/m3	2DP	After test bulk density for MCVT_TESN	2.02

Group Name: MCVT - MCV Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	MCVT_DIFF	mm	1DP	Difference between initial (n) and final (3n) blows in rapid assessment test	4.5
	MCVT_RAPD		X	Stronger or weaker than pre-calibrated standard	Weaker
	MCVT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS15

Group Notes

• MCVT_BDEN is included to allow reporting of bulk density of the specimen after test. However, the requirement and procedure for this is not covered by BS1377.

• MCVT_DIFF and MCVT_RAPD are proposed to allow adequate and unambiguous reporting of a rapid assessment test.

Group Name: MOND - Monitoring Readings					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**MONG_ID**		X	Monitoring point reference	P1
*	**MONG_DIS**	m	2DP	Initial distance of monitoring point from LOCA_ID datum	2.30
*	**MOND_DTIM**	yyyy-mm-ddThh:mm:ss	DT	Date and time of reading	2003-02-20T13:40:00
*	**MOND_TYPE**		PA	Reading type	WDEP
*	**MOND_REF**		X	Reading reference	2
	MOND_INST		X	Instrument reference / serial number	14124-1
	MOND_RDNG		XN	Reading	10.34
R	**MOND_UNIT**		PU	Units of reading	m
	MOND_METH		X	Measurement method	
	MOND_LIM		U	Instrument/method reading/detection limit	
	MOND_ULIM		U	Instrument/method upper reading/detection (when appropriate)	
	MOND_NAME		X	Client preferred name of measurement	
	MOND_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	MOND_CONT		X	Organization taking reading	ACME Monitoring
	MOND_REM		X	Comments on reading	
	FILE_FSET		X	Associated file reference (e.g. monitoring field sheets, instrument logging file)	FS28

Group Rules

• MOND_RDNG shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

• Where a reading has no unit, the MOND_UNIT data shall be set to "UNITLESS".

• Units included in MOND_UNIT shall be fully defined in the UNIT group (Rule 15), the unit group is case sensitive.

• Data type for data field heading MOND_UNIT shall not be changed from PU.

Group Notes

• MOND is used to transfer measurements or readings from instruments or geoenvironmental monitoring equipment. Geoenvironmental sampling (and laboratory testing should be included in the SAMP/ELRG groups).

• This group covers the scope of data included in AGS3 within groups MONR and ICCT.

• MOND_TYPE defines the reading but not the instrument type nor units (which are defined by MONG_TYPE and MOND_UNIT respectively).

A full list of abbreviations is provided on the AGS website www.agsdataformat.org.uk.

• Units included in MOND_UNIT must be fully defined in the UNIT group (Rule 15). It is possible that units require conversion when the data is received and amalgamated into project databases to ensure that data are consistent across monitoring tranches and appropriate for the assessment.

• Where an instrument records more than one parameter with each reading, for example the three components for a survey total station, or the temperature and pressure then each reading has separate entry.

• Allowance has been made for recording peak and steady gas concentrations which are a requirement of the SISG specification and CIRIA C665 report / BS8676:2013.

• If an incident affects a particular instrument or a particular data reading in a single instrument then it is best reported as a remark in MOND_REM on the date and time at which it occurred or was noted, and associated with the particular reading that is affected e.g. 'Installation vandalised. Cover damaged'.

• If there is an event on the site that is of a more general nature that may affect the results on a number of instruments then this can be reported in PREM or TREM as a time related remark.

Group Name: MONG - Monitoring Installations and Instruments					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**MONG_ID**		X	Monitoring point reference	P1
*	**MONG_DIS**	m	2DP	Initial distance of monitoring point from LOCA_ID	2.30
	PIPE_REF		X	Pipe reference	Pipe1
	MONG_DATE	yyyy-mm-dd	DT	Installation date	2003-01-01
	MONG_TYPE		PA	Instrument type	TS
	MONG_DETL		X	Details of instrument	Total Station
	MONG_TRZ	m	2DP	Distance to start of response zone from LOCA_ID datum	5.50
	MONG_BRZ	m	2DP	Distance to end of response zone from LOCA_ID datum	7.50
	MONG_BRGA	deg	0DP	Bearing of monitoring axis A (compass bearing)	90
	MONG_BRGB	deg	0DP	Bearing of monitoring axis B (compass bearing)	180
	MONG_BRGC	deg	0DP	Bearing of monitoring axis C (compass bearing)	270

Group Name: MONG - Monitoring Installations and Instruments					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	MONG_INCA	deg	0DP	Inclination of instrument axis A (measured positively down from horizontal)	
	MONG_INCB	deg	0DP	Inclination of instrument axis B (measured positively down from horizontal)	
	MONG_INCC	deg	0DP	Inclination of instrument axis C (measured positively down from horizontal)	
	MONG_RSCA		X	Reading sign convention in direction A	Displacement to East +ve
	MONG_RSCB		X	Reading sign convention in direction B	Displacement to South +ve
	MONG_RSCC		X	Reading sign convention in direction C	Displacement up +ve
	MONG_REM		X	Remarks	Behind wall
	MONG_CONT		X	Contractor who installed monitoring instrument	ACME Instruments Ltd
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS27

Group Notes

• Each monitoring point should have a unique identification detailed in MONG_ID. Typically this reflects the actual reference or marking on the instrument.

• MONG_DETL should be used to describe the instrument/sensor location or parameter in specific terms.

• MONG_CONT used to include details of which organization installed the monitoring device.

• PIPE_REF is to be used to link the monitoring installation with the appropriate pipe within an installation (for example where there is both a shallow and a deep installation).

Group Name: PIPE - Monitoring Installation Pipe Work					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PIPE_REF**		X	Pipe reference	Pipe1
*	**PIPE_TOP**	m	2DP	Top of construction zone	0.00
*	**PIPE_BASE**	m	2DP	Base of construction zone	2.50
	PIPE_DIAM	mm	0DP	Diameter of pipe	75
	PIPE_TYPE		PA	Type of pipe	SLOTTED
	PIPE_CONS		X	Details of pipe construction	
	PIPE_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS32

Group Notes

• PIPE is to be used to transfer pipe work lengths installed in an exploratory hole to provide instrumentation access.

• A data row is included for each pipe length/type/diameter combination in a hole.

• PIPE_TYPE would typically define the graphics used to represent the installation pipe work on reports or diagrams.

Group Name: PLTG - Plate Loading Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PLTG_DPTH**	m	2DP	Test depth	1.23
*	**PLTG_TESN**		X	Test reference	1
*	**PLTG_CYC**		X	Load cycle	1
	PLTG_PDIA	mm	0DP	Plate diameter	600
	PLTG_SEAT	kN	1DP	Seating load including apparatus mass	10.0
	PLTG_FA0		2DP	Factor a0	0.00
	PLTG_FA1		2DP	Factor a1	12.65
	PLTG_FA2		2DP	Factor a2	-7.58
	PLTG_SMOD	MPa	1DP	Strain modulus	15.8
	PLTG_EV2	MPa	1DP	Elastic modulus for second loading cycle	83.0
	PLTG_MOSR	MPa/m	1DP	Modulus of subgrade reaction	60.8
	PLTG_EMOD	MPa	1DP	Elastic modulus	21.7
	PLTG_DATE	yyyy-mm-dd	DT	Test date	2008-07-23
	PLTG_STAB	%	2SF	Amount of stabiliser added	23
	PLTG_STYP		X	Type of stabiliser added	Cement
	PLTG_REM		X	Remarks	
	PLTG_ENV		X	Details of weather and environmental conditions during test	Dry and warm
	PLTG_METH		X	Test method	DIN18134 Strain Modulus
	PLTG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	PLTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11

Group Notes

• PLTG is to be used to transfer plate load tests. One data row in this group represents a test and loading cycle.

• The Factors a0, a1 and a2 are determined in testing carried out to the DIN standard and would not be appropriate for testing to other standards.

• PLTG_EV2 is normally only completed when PLTG_CYC = 2.

Group Name: PLTT - Plate Loading Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PLTG_DPTH**	m	2DP	Test depth	1.23
*	**PLTG_TESN**		X	Test reference	1
*	**PLTG_CYC**		X	Load cycle	1
*	**PLTT_STG**		X	Load stage	1
*	**PLTT_TIME**	min	1DP	Stage elapsed time	0.5
	PLTT_LOAD	kN	1DP	Applied load	10.0
	PLTT_SET1	mm	2DP	Settlement Gauge 1	0.86
	PLTT_SET2	mm	2DP	Settlement Gauge 2	0.74
	PLTT_SET3	mm	2DP	Settlement Gauge 3	0.91
	PLTT_SET4	mm	2DP	Settlement Gauge 4	0.00
	PLTT_REM		X	Comments on reading	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

Group Notes

• PLTT is used to transfer the load settlement readings from a test/load cycle of a plate load test.

Group Name: PMTG - Pressuremeter Test Results - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PMTG_DPTH**	m	2DP	Depth of test	2.70
*	**PMTG_TESN**		X	Test reference	1
	PMTG_DATE	yyyy-mm-dd	DT	Date of test	1993-12-23
	PMTG_WAT	m	2DP	Measured or assumed ground water level	1.53
	PMTG_CONT		X	Subcontractors name	An Contractor Ltd
	PMTG_CREW		X	Operators details	ANO/TBA
	PMTG_REF		X	Instrument reference / serial number	PMT123456

Group Name: PMTG - Pressuremeter Test Results - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	PMTG_TYPE		PA	Pressuremeter type	SBP
	PMTG_DIAM	mm	2DP	Uninflated diameter of pressuremeter	82.90
	PMTG_HO	kPa	0DP	Estimated in situ horizontal stress	700
	PMTG_GI	MPa	0DP	Initial shear modulus	70
	PMTG_CU	kPa	0DP	Undrained shear strength	420
	PMTG_PL	kPa	0DP	Limit pressure	3400
	PMTG_AF	deg	1DP	Angle of friction	39.0
	PMTG_AD	deg	0DP	Angle of dilation	10
	PMTG_AFCV	deg	1DP	Angle of friction at constant volume (*cv) used	35.0
	PMTG_METH		X	Method(s) used to determine derived soil parameters (including those in PMTL).	
	PMTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	PMTG_ENV		X	Details of weather and environmental conditions during test	Rain, standing water close to test area
	PMTG_REM		X	Remarks	6 arms used in determination of average
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11
	PMTG_NUAR		0DP	Number of arms	6
	PMTG_ORNT		X	Bearing of arm 1 (clockwise degrees from North)	015
	PMTG_AXIS		X	Arm combination used for analysis	Average arms

Group Notes

• PMTG (together with PMTD and PMTL) are used to record pressuremeter tests using standard pressuremeters, including Menard type pressuremeters, self-boring pressuremeters, pre-bored pressuremeters (dilatometers) and full-displacement pressuremeters (e.g. cone pressuremeters).

• PMTG_NUAR has been added to record the number of displacement measurement 'arms' for the pressuremeter used. This data variable will be null (Rule 12) for devices based on volume measurement (e.g. original Menard pressuremeter).

• PMTG_ORNT has been added to record the orientation of Arm 1 as clockwise angle in degrees relative to North.

• Interpretation of parameters is conventionally carried out on average displacements measured on the three instrument axes (generally by 3 or 6 arms), however, alternative arm combinations may be used where readings from one or more arms are considered to be unrepresentative. The arm combination is recorded in PMTG_AXIS; likely combinations for a 6 arm device would be Average arms, Odd arms (arms 1, 3 and 5), Even arms (arms 2, 4 and 6), Axis 1 (arms 1 and 4), etc. If one or more arms/axes are excluded this should be noted in PMTG_REM.

Group Name: PMTD - Pressuremeter Test Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PMTG_DPTH**	m	2DP	Depth of test	2.70
*	**PMTG_TESN**		X	Test reference	1
*	**PMTD_SEQ**		0DP	Sequence number	1
	~~**PMTD_ARM1**~~	~~mm~~	~~3DP~~	~~Axis 1 displacement~~	~~1.003~~
	~~**PMTD_ARM2**~~	~~mm~~	~~3DP~~	~~Axis 2 displacement~~	~~1.004~~
	~~**PMTD_ARM3**~~	~~mm~~	~~3DP~~	~~Axis 3 displacement~~	~~1.005~~
	PMTD_TPC	kPa	1DP	Total pressure	54.4
	PMTD_PPA	kPa	1DP	Pore pressure cell A	2.9
	PMTD_PPB	kPa	1DP	Pore pressure cell B	2.9
	PMTD_VOL	cm3	1DP	Volume change in test cell	2.6
	PMTD_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	PMTD_AX1	mm	3DP	Axis 1 displacement	1.003
	PMTD_AX2	mm	3DP	Axis 2 displacement	1.004
	PMTD_AX3	mm	3DP	Axis 3 displacement	1.005
	PMTD_SA1	mm	3DP	Arm 1 displacement	2.001
	PMTD_SA2	mm	3DP	Arm 2 displacement	2.002
	PMTD_SA3	mm	3DP	Arm 3 displacement	2.003
	PMTD_SA4	mm	3DP	Arm 4 displacement	2.004
	PMTD_SA5	mm	3DP	Arm 5 displacement	2.005
	PMTD_SA6	mm	3DP	Arm 6 displacement	2.006
	PMTD_SAME	mm	3DP	Mean arm displacement	2.004

Group Notes

Due to potential conflict of interpretation for definitions of PMTD_ARM1, PMTD_ARM2 and PMTD_ARM3, and suggested use of additional arm displacement headings (i.e. PMTD_ARM4 etc) these have been deprecated and replaced with field headings for separate reporting of arm and axis displacements.

PMTD_AX1, PMTD_AX2 and PMTD_AX3 are used to report displacements across the pressuremeter axis. This is the change in diameter across the outside of the pressuremeter membrane (and Chinese lantern strips or other protective sheath if fitted) as measured on the inside of the membrane by a single arm (3 arm pressuremeter) or pair of diametrically opposite arms (6 arm pressuremeter) and adjusted for the thickness of the membrane (including effects of membrane compression and thinning with expansion).

Displacements measured directly by individual arms are reported using PMTD_SA1 etc, according to the number of displacement measuring arms fitted.

PMTD_SAME is used to report the mean arm displacement.

• Pressuremeters not fitted with internal strain arms (e.g. Menard type pressuremeters), where the volumetric expansion of the pressuremeter is measured by recording the volume of fluid entering the system, will have no data for PMTD_ARM1, 2 and 3. The volume change in the test cell entered in PMTD_VOL is the volumetric change measured at the surface corrected for line expansion, etc.

• Previous requirements to record the pressure against each arm/axis of the equipment have been removed and replaced with the total pressure in the test cell PMTD_TPC. The total pressure is measured inside the pressuremeter with a pressure cell. The measured pressure is corrected for the inherent stiffness of the membrane – the amount of pressure to inflate the membrane when the pressuremeter is out of the ground. This amount is assessed by a membrane calibration where the membrane is inflated in free air. The pressure correction is subtracted from the measured pressure to get the pressure exerted on the ground.

• PMTD_TPC is the pressure imposed by the outside of the membrane; i.e. that required to expand the pressuremeter, corrected for the inherent membrane stiffness. For modern type pressuremeters this is normally measured inside the pressuremeter by one or more electronic transducers. For instruments without internal pressure transducers, where the pressure is measured at the surface, PMTD_TPC will also include corrected for the elevation head due to the difference in height between the pressuremeter instrument in the borehole and the measuring equipment at the surface.

Group Name: PMTL - Pressuremeter Test Results - Individual Loops					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PMTG_DPTH**	m	2DP	Depth of test	2.70
*	**PMTG_TESN**		X	Test reference	1
*	**PMTD_SEQ**		0DP	Sequence number	1
*	**PMTL_LNO**		0DP	Unload/reload loop number	1
	PMTL_GAA	MPa	0DP	Unload/reload shear modulus, average	139
	PMTL_SINC	%	2DP	Mean strain	3.48
	PMTL_PINC	kPa	0DP	Mean pressure	1586
	PMTL_STRA	%	3DP	Strain range or amplitude	0.105
	PMTL_PRSA	kPa	0DP	Pressure range or amplitude	284
	PMTL_NLSA	MPa	3DP	Shear stress coefficient (from Bolton and Whittle, 1999)	2.921
	PMTL_NLSB		3DP	Linearity exponent (from Bolton and Whittle, 1999)	0.538
	PMTL_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	PMTL_AXIS		X	Arm combination used for analysis	Odd arms

Group Notes

• PMTL is used to transfer summary details of test loops. If detailed information is required on test loop data this would be provided as attached files and listed under FILE_FSET in the PMTG group.

• Additional headings PMTL_NLSA and PMTL_NLSB have been added to include for data from Bolton and Whittle's (1999) interpretation of unload-reload loops to derive non-linear stiffness parameters. The interpretation gives two parameters, sometimes referred to as the linearity exponent and shear stress coefficient (Beta and alpha respective).

• PMTL_AXIS is used to report which arm combination has been used for analysis of the test loops in the same way as defined for PMTG_AXIS given above.

Group Name: PREM - Project Specific Time Related Remarks					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**PREM_DTIM**	yyyy-mm-ddThh:mm	DT	Date and time of remark or start of event	2001-05-16T12:00
	PREM_COMP		X	Component or sub-activity	Slab G12
	PREM_REM		X	Time related remark	Completion of concrete pour
	PREM_DURN	hh:mm:ss	T	Duration of event or activity	01:25:00
	PREM_ETIM	yyyy-mm-ddThh:mm	DT	Date and time of end of event	2001-05-16T16:00
	FILE_FSET		X	Associated file reference (e.g. site journal records)	FS28

Group Notes

• PREM may be used to report a site diary of key events e.g. 'Heavy rain for 2 days, site flooded'.

• TREM should be used to record general remarks that are related to a site location.

• PREM_ETIM and PREM_DURN could be different depending on the nature of the activity or commentary. Where there are differences in elapsed time and duration these would be explained or expanded on in PREM_REM.

Group Name: PTIM - Boring/Drilling Progress by Time					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PTIM_DTIM**	yyyy-mm-ddThh:mm	DT	Date and time of progress reading	1991-03-01T14:35
	PTIM_DPTH	m	2DP	Hole depth	22.13
	PTIM_CAS	m	2DP	Depth of casing	20.50
	PTIM_WAT	m	XN	Depth to water	16.56 or Dry
	PTIM_REM		X	Remarks	Stopped drilling on client's instruction
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS21

Group Notes

• PTIM is used to record information on the development of the exploratory hole, including readings of depth of hole, casing and water level at the start and end of shift.

Group Name: PTST - Laboratory Permeability Tests					
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

Group Name: PTST - Laboratory Permeability Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**SAMP_TYPE**		PA	Sample type	U
*	**SAMP_ID**		ID	Sample unique identifier	ABC121415010
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**PTST_TESN**		X	Test reference	2
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	PTST_COND		PA	Sample condition	UNDISTURBED
	PTST_SZUN	mm	0DP	Size cut off of material too coarse for testing	5
	PTST_UNS	%	0DP	Proportion of material removed above PTST	36
	PTST_DIAM	mm	2DP	Specimen diameter	102.52
	PTST_LEN	mm	2DP	Specimen length	200.22
	PTST_MC	%	X	Initial water/moisture content of test specimen	20
	PTST_BDEN	Mg/m3	2DP	Initial bulk density of test specimen	2.24
	PTST_DDEN	Mg/m3	2DP	Initial dry density	1.87
	PTST_IDIA	mm	2DP	Diameter of drain for radial permeability in hydraulic cell	3.75
	PTST_DMET		X	Method of forming central drain	Bored using mandrel and filled with saturated sand
	PTST_VOID		3DP	Initial voids ratio	0.375
	PTST_K	m/s	1SCI	Coefficient of permeability	4.1E-6
	PTST_TSTR	kPa	0DP	Mean effective stress at which permeability measured (when measured in triaxial or hydraulic cell).	112
	PTST_HYGR		0DP	Hydraulic gradient at which permeability measured (for constant head test).	1
	PTST_ISAT	%	2SF	Initial degree of saturation	72
	PTST_SAT		X	Details of saturation, where appropriate	Back pressure, Bf = 0.96
	PTST_CONS		X	Details of consolidation, where appropriate	Drainage to top with pwp at base
	PTST_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	PTST_TYPE		PA	Type of permeability measurement	Falling head
	PTST_CELL		PA	Type of permeameter	TRIAXIAL CELL
	PTST_REM		X	Remarks on test	
	PTST_METH		X	Test method	BS1377 Part 5

Group Name: PTST - Laboratory Permeability Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	PTST_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	PTST_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS28
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	PTST_DEV		X	Deviations from the test method	
	PTST_WCIS		X	Initial water content source	Specimen trimmings
	PTST_WCF	%	X	Final water content of test specimen	20.2
	PTST_FSAT	%	2SF	Final degree of saturation, if determined	72
	PTST_TEMP	DegC	1DP	Average laboratory temperature at which the test was performed	20.2
	PTST_SOUR		X	Source of permeameter water	Tap water
	PTST_BACK	kPa	0DP	Back pressure	50
	PTST_BVAL		2DP	B-value, if used	0.98
	PTST_LOSS		X	Equipment head loss corrections applied to the measurements, if any, and the associated flow rates	

Group Notes

• None.

Group Name: PUMG - Pumping Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PUMG_TEST**		X	Test reference	1991-03-16#1
	PUMG_CONT		X	Contractor	PUMP Ltd
	PUMG_METH		X	Method of testing	BS 6316
	PUMG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	PUMG_ENV		X	Details of weather and environmental conditions during test	Heavy rain
	PUMG_REM		X	Remarks on test	Double packer
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11

Group Notes

• PUMG is to be used to record the general arrangements and details of pumping test.

Group Name: PUMT - Pumping Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**PUMG_TEST**		X	Test reference	1991-03-16#1
*	**PUMT_DTIM**	yyyy-mm-ddThh:mm	DT	Date and time of reading	1991-03-16T13:25
	PUMT_DPTH	m	2DP	Depth to water below ground	12.50
	PUMT_QUAT	l/s	1DP	Pumping rate from hole	0.8
	PUMT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS29

Group Notes

• The general information about the pumping test should be recorded in the PUMG group.

• Records for observation holes and piezometers during the tests can be recorded in MONG and MOND.

Group Name: RCAG - Rock Abrasiveness Tests - General					
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	C
*	**SAMP_ID**		ID	Sample unique identifier	ABC121415010
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Weak brown fine grained SANDSTONE
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RCAG_DEV		X	Deviation from the specified procedure	
	RCAG_DATE	yyyy-mm-dd	DT	Date of test	2020-01-06
	RCAG_COND		X	Condition of specimen as tested (saturated, as received, air dried, oven dried, etc)	Air dried
	RCAG_GSIZ		2DP	Maximum grain size	0.06

Group Name: RCAG - Rock Abrasiveness Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	RCAG_ANIS		X	Planes of weakness or anisotropy present (bedding, schistosity, etc)	Thinly laminated
	RCAG_MACH		X	Type of apparatus	Type 1 ACME Model 12345
	RCAG_MMTD		X	Measurement method (side view, top view, optical, digital)	Side view, optical
	RCAG_CAIM		1DP	CAI mean value	2.1
	RCAG_CAIS		2DP	CAI standard deviation	0.11
	RCAG_ABCL		X	Abrasiveness classification	Low
	RCAG_REM		X	Remarks	45° relative to axis, Tests carried out at prevailing surface unless annotated otherwise.
	RCAG_METH		X	Test method	ISRM: Suggested Method for Determining the Abrasivity of Rock by the CERCHAR Abrasivity Test
	RCAG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RCAG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

Group Notes

• This group is for reporting the results of rock abrasiveness tests carried out by the Cerchar method in accordance with ISRM Suggested Method for Determining the Abrasivity of Rock by the CERCHAR Abrasivity Test (2013)

Group Name: RCAT - Rock Abrasiveness Tests - Data					
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	C
*	**SAMP_ID**		ID	Sample unique identifier	ABC121415010
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**RCAT_TESN**		X	Measurement number	1
	RCAT_CUT		X	Surface condition (rough, saw-cut)	Fresh saw-cut
	RCAT_SDIR		X	Direction of scratching with respect to planes of weakness or anisotropy	Normal
	RCAT_STYH		0DP	Rockwell hardness HRC of stylus	42

Group Name: RCAT - Rock Abrasiveness Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	RCAT_STYC		X	Stylus condition (new or re-sharpened)	Re-sharpened
	RCAT_CAI		1DP	As measured CAI value	2.4
	RCAT_CAIS		1DP	Equivalent CAI value at standard stylus hardness HRC 55	3.1
	RCAT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	CHER23

Group Notes

• None

Group Name: RCCV - Chalk Crushing Value Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**RCCV_TESN**		X	Test reference	3
	SPEC_DESC		X	Specimen description	White chalk
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RCCV_MC	%	X	Water content of specimen tested	2.1
	RCCV_CCV		1DP	Chalk crushing value	5.6
	RCCV_100	%	0DP	Percentage larger than 10mm in original sample	85
	RCCV_REM		X	Remarks	
	RCCV_METH		X	Test method	BS 1377 Part 4 Cl 6
	RCCV_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RCCV_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

Group Name: RCCV - Chalk Crushing Value Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RCCV_DEV		X	Deviation from the specified procedure	

Group Notes

• Group added to report data specific to the Chalk Crushing Value test to BS1377 part 4 Clause 6.

• The saturated water/moisture content should be reported in RDEN_SMC.

Group Name: RDEN - Rock Porosity and Density Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RDEN_MC	%	X	Water content of specimen	2.1
	RDEN_SMC	%	X	Saturated water content	2.3
	RDEN_BDEN	kg/m3	0DP	Bulk density	2260
	RDEN_DDEN	kg/m3	0DP	Dry density	2210
	RDEN_PORO	%	1DP	Porosity	17.3
	RDEN_PDEN	kg/m3	0DP	Apparent particle density	2750
	RDEN_TEMP	DegC	0DP	Temperature sample dried at	60
	RDEN_REM		X	Remarks	Average of three reported
	RDEN_METH		X	Test method	ISRM: Suggested method for determining porosity/density using saturation and calliper technique.
	RDEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RDEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

Group Name: RDEN - Rock Porosity and Density Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	RDEN_IDEN	Mg/m3	2DP	Intact dry density	1.78
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RDEN_DEV		X	Deviation from the specified procedure	

Group Notes

• Measurements of density on soil materials should be reported in LDEN.

• RDEN_PDEN is denoted as the 'apparent particle density' reflecting fact that it is calculated rather than measured. This may not be the same as the particle density of the solid material.

Group Name: RELD - Relative Density Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RELD_DMAX	Mg/m3	2DP	Maximum dry density	2.15
	RELD_375	%	0DP	Weight percent of sample retained on 37.5mm sieve	7
	RELD_063	%	0DP	Weight percent of sample retained on 6.3mm sieve	10
	RELD_020	%	0DP	Weight percent of sample retained on 2mm sieve	5
	RELD_DMIN	Mg/m3	2DP	Minimum dry density	1.65
	RELD_REM		X	Remarks on test	Material >37.5 replaced with smaller material
	RELD_METH		X	Test method	BS1377 part 4: 4.2 and 4.4
	RELD_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RELD_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked

Group Name: RELD - Relative Density Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS24
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RELD_DEV		X	Deviation from the specified procedure	

Group Notes

• The maximum and minimum on sands has the possibility of being on two different sizes, <6.3mm (max) and <2mm (min). Since the minimum density is a discreet test the percentage retained 2mm should be the total and not that between 6.3 and 2mm - as may be derived in practice.

Group Name: RESC - Resonant Column Test - Consolidation					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	BH01
*	**SAMP_TOP**	m	2DP	Depth to top of sample	10.12
*	**SAMP_REF**		X	Sample reference	10WaxA
*	**SAMP_TYPE**		PA	Sample type	U
*	**SAMP_ID**		ID	Sample unique identifier	12345
*	**SPEC_REF**		X	Specimen reference	DSS01
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	10.15
*	**RESC_TESN**		X	Test / Stage Number	2
	RESC_SDIA	mm	2DP	Specimen diameter	22.15
	RESC_HIGH	mm	2DP	Specimen height	25.15
	RESC_CTYP		PA	Type of consolidation	ISOTROPIC
	RESC_ELAP	hh:mm:ss	T	Duration of stage	09:15:30
	RESC_CHGT	mm	2DP	Specimen height at end of test/stage	21.32
	RESC_CDIA	mm	2DP	Specimen diameter at end of test/stage	21.98
	RESC_CMC	%	X	Water content at end of test/stage	21
	RESC_CDDN	Mg/m3	2DP	Dry density at end of test/stage	1.61
	RESC_CRD	%	1DP	Relative density at end of test/stage	90.1
	RESC_INCE		3DP	Voids ratio at end of test/stage	0.765
	RESC_EASC	kPa	1DP	Effective axial stress during consolidation at end of test/stage	200.5
	RESC_ERSC	kPa	1DP	Effective radial stress during consolidation at end of test/stage	100.4
	RESC_DEVS	kPa	1DP	Deviatoric stress at end of test/stage	99.1
	RESC_SHRS	kPa	1DP	Shear stress at end of test/stage	25.3

Group Name: RESC - Resonant Column Test - Consolidation					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	RESC_MNES	kPa	1DP	Mean effective stress at end of test/stage	16.5
	RESC_AXSN	%	3DP	Axial strain at end of test/stage	1.456
	RESC_VLSN	%	3DP	Volumetric strain from measured volume change at end of test/stage	1.812
	RESC_RDSN	%	3DP	Radial strain from measured volume change	0.184
	RESC_BESE		X	Bender element test sequence	After anisotropic consolidation stage 2
	RESC_BEAX		X	Bender element axis of measurement	Shv
	RESC_DBTE	mm	2DP	Distance between bender elements	196.16
	RESC_MAT	s	4DP	Measured arrival time of propagated wave	0.4941
	RESC_MATM		X	Method of measuring arrival time of propagated wave	Peak to peak
	RESC_SWV	m/s	0DP	Calculated shear wave velocity	395
	RESC_SMGM	MPa	1DP	Shear modulus Gmax from bender elements	295.3
	RESC_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS10

Group Notes

• None

Group Name: RESD - Resonant Column Test – Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	BH01
*	**SAMP_TOP**	m	2DP	Depth to top of sample	10.12
*	**SAMP_REF**		X	Sample reference	10WaxA
*	**SAMP_TYPE**		PA	Sample type	U
*	**SAMP_ID**		ID	Sample unique identifier	12345
*	**SPEC_REF**		X	Specimen reference	DSS01
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	10.15
*	**RESD_TESN**		X	Test / Stage Number	2
*	**RESD_MNUM**		X	Measurement Number	3
	RESD_CNDS		PA	Test Conditions	DRAINED
	RESD_SDIA	mm	2DP	Specimen Diameter	22.15
	RESD_HIGH	mm	2DP	Specimen Height	44.32
	RESD_CELL	kPa	1DP	Cell Pressure	350.5

Group Name: RESD - Resonant Column Test – Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	RESD_BP	kPa	1DP	Back Pressure	779.4
	RESD_AXL	kPa	1DP	Axial Stress	523.2
	RESD_BPWP	kPa	1DP	Base Pore Water Pressure	692.3
	RESD_MPWP	kPa	1DP	Mid-height Pore Water Pressure	692.2
	RESD_PPR		2DP	Pore Pressure Ratio	0.07
	RESD_PWPM	kPa	1DP	Maximum Excess Pore Water Pressure	100.1
	RESD_EAS	%	3DP	External Axial Strain	0.002
	RESD_VOL	%	3DP	Volumetric Strain	0.002
	RESD_DEV	kPa	1DP	Principal Stress Difference	150.2
	RESD_MEES	kPa	1DP	Mean Effective Stress	510.3
	RESD_MIPS	kPa	1DP	Minor Principal Stress (sigma 3)	560.4
	RESD_MAPS	kPa	1DP	Major Principal Stress (sigma 1)	720.5
	RESD_AVSS	%	3DP	Average Shear Strain	5.234
	RESD_SM	MPa	2DP	Shear Modulus	56.23
	RESD_DMP	%	2DP	Damping	10.56
	RESD_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS10

Group Notes

• None

Group Name: RESG - Resonant Column Test – General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	BH01
*	**SAMP_TOP**	m	2DP	Depth to top of sample	10
*	**SAMP_REF**		X	Sample reference	10WaxA
*	**SAMP_TYPE**		PA	Sample type	U
*	**SAMP_ID**		ID	Sample unique identifier	12345
*	**SPEC_REF**		X	Specimen reference	DSS01
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	10.15
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RESG_COND		PA	Sample condition	UNDISTURBED

Group Name: RESG - Resonant Column Test – General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	RESG_CONS		X	Specific condition statements	At natural moisture content
	RESG_DRAG		X	Type of Drainage	One end only
	RESG_ORNT		PA	Orientation of Specimen	Vertical
	RESG_SDIA	mm	2DP	Initial specimen diameter	22.15
	RESG_HIGT	mm	2DP	Initial specimen Height	25.15
	RESG_MCI	%	X	Initial Water/moisture Content	10.5
	RESG_MCF	%	X	Final Water/moisture Content	10.4
	RESG_BDEN	Mg/m3	2DP	Initial Bulk Density	2.12
	RESG_DDEN	Mg/m3	2DP	Initial Dry Density	2.05
	RESG_MIDD	Mg/m3	2DP	Minimum dry density for sand	1.17
	RESG_MADD	Mg/m3	2DP	Maximum dry density for sand	1.86
	RESG_IRDI	%	1DP	Initial relative density index	80.1
	RESG_IVR		3DP	Initial void ratio	0.995
	RESG_ISAT	%	0DP	Initial degree of saturation	97
	RESG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	RESG_DAMP		X	Damping measurement method	Steady state/ free vibration
	RESG_DEV		X	Deviation from the specified procedure	
	RESG_REM		X	Remarks	
	RESG_METH		X	Test method	ASTM D4015-07
	RESG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RESG_CRED		X	Accrediting body and reference number ({when appropriate)	UKAS 0000
	TEST_STAT		X	Test Status	Draft
	FILE_FSET		X	Associated file reference	FS10

Group Notes

• None

Group Name: RESP - Resonant Column Test - Derived Parameters					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	BH01
*	**SAMP_TOP**	m	2DP	Depth to top of sample	10
*	**SAMP_REF**		X	Sample reference	10WaxA
*	**SAMP_TYPE**		PA	Sample type	U
*	**SAMP_ID**		ID	Sample unique identifier	12345
*	**SPEC_REF**		X	Specimen reference	DSS01
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	10.15
*	**RESD_TESN**		X	Test / Stage Number	2
*	**RESD_MNUM**		X	Measurement Number	3
	RESP_CTYP		X	Type of Consolidation	Isotropic
	RESP_CSTG		0DP	Consolidation Stage	3
	RESP_CELL	kPa	1DP	Isotropic/Anisotropic Consolidation Cell Pressure	600.5
	RESP_BACK	kPa	1DP	Isotropic/Anisotropic Consolidation Back Pressure	530.5
	RESP_ERSC	kPa	1DP	Effective Radial Stress During Consolidation	40.4
	RESP_EASC	kPa	1DP	Effective Axial Stress During Consolidation	32.3
	RESP_DEV	kPa	1DP	Deviator Stress at End of Isotropic/Anisotropic Consolidation	-8.5
	RESP_VOLS	%	3DP	Change to Volumetric Strain During Isotropic/Anisotropic Consolidation	3.081
	RESP_STRN	%	3DP	Axial Strain After Isotropic/Anisotropic Consolidation	9.212
	RESP_SMOD	MPa	2DP	Shear Modulus G0	29.31
	RESP_SSTR	kPa	1DP	Mean Effective Stress	200.1
	RESP_DAMP	%	4DP	Damping Ratio	1.3581
	RESP_SMRA		2DP	Normalised Shear Modulus by Maximum Shear Modulus	0.75
	RESP_SR		2DP	Slippage Ratio	0.21
	RESP_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS10

Group Notes

• None

Group Name: RESS - Resonant Column Test – Saturation					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	BH01
*	**SAMP_TOP**	m	2DP	Depth to top of sample	10
*	**SAMP_REF**		X	Sample reference	10WaxA
*	**SAMP_TYPE**		PA	Sample type	U
*	**SAMP_ID**		ID	Sample unique identifier	12345
*	**SPEC_REF**		X	Specimen reference	DSS01
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	10.15
*	**RESS_TESN**		X	Test / Stage Number	3
	RESS_INC	kPa	1DP	Pressure increment	10.1
	RESS_DIFF	kPa	1DP	Differential pressure used	20.2
	RESS_CELL	kPa	1DP	Final cell pressure	200.5
	RESS_BPWP	kPa	1DP	Final base porewater pressure	200.4
	RESS_STRN	%	3DP	Final axial strain	1.256
	RESS_MCF	%	X	Final water content	20
	RESS_BDEN	Mg/m3	2DP	Final bulk density	1.79
	RESS_DDEN	Mg/m3	2DP	Final dry density	1.66
	RESS_FVR		3DP	Final voids ratio	0.976
	RESS_FSAT	%	0DP	Final degree of saturation	100
	RESS_B		2DP	Final B value	0.96
	RESS_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS10

Group Notes

• None

Group Name: RPLT - Point Load Testing					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone

Group Name: RPLT - Point Load Testing					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RPLT_PLS	MPa	2DP	Uncorrected point load (Is)	2.3
	RPLT_PLSI	MPa	2DP	Size corrected point load index (Is 50)	2.5
	RPLT_PLTF		PA	Point load test type	A+L
	RPLT_MC	%	1DP	Water content of point load test specimen	2.1
	RPLT_REM		X	Remarks	Saturated specimen
	RPLT_METH		X	Test method	ISRM: 2007 : Suggested method for determining point load strength. Int J Rock Mech Min Sci & Geomech Abstr, Vol 22, No 2, pp 51-60
	RPLT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RPLT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RPLT_DEV		X	Deviation from the specified procedure	

Group Notes

• A list has been defined for RPLT_PLTF to include the test abbreviations derived from the ISRM Suggested Method (ISRM, 2007). Typically a test will include combined abbreviations to represent the sample type/orientation and the direction of the test with respect to bedding. For example a piece of core tested across the diameter and along the bedding direction will be coded as A+L. Reference: ISRM: 2007 : The Complete ISRM Suggested Methods for Rock Characterisation , Testing and Monitoring : 1974-2006.

Group Name: RSCH - Schmidt Rebound Hardness Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone

Group Name: RSCH - Schmidt Rebound Hardness Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RSCH_SCHV		0DP	Schmidt hardness value	12
	RSCH_AXIS		X	Orientation of the hammer axis in the test from horizontal (positive numbers downwards and negative numbers upward)	
	RSCH_CLAM		X	Method of clamping specimen	V-block
	RSCH_REM		X	Remarks	
	RSCH_METH		X	Test method	ISRM: Suggested method for determination of Schmidt rebound hardness
	RSCH_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RSCH_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RSCH_DEV		X	Deviation from the specified procedure	
	RSCH_STYP		PA	Specimen type	CORE
	RSCH_EXCV		PA	Method of excavation or block production	BORING
	RSCH_DIAM	mm	1DP	Specimen diameter	86.7
	RSCH_LEN	mm	1DP	Specimen length	235.3
	RSCH_WC	%	1DP	Water content of specimen, if measured	2.1
	RSCH_WCTX		X	Description of water content if not measured	DRY
	RSCH_HTYP		X	Hammer type	L-TYPE
	RSCH_ORN			Orientation of hammer axis with reference to intact rock anisotropy features (e.g. lamination, foliation, schistosity, lineation)	Perpendicular to lamination
	RSCH_MEAN		0DP	Schmidt hardness mean (normalized to horizontal impact direction)	12
	RSCH_MED		0DP	Schmidt hardness median (normalized to horizontal impact direction)	12
	RSCH_MODE		0DP	Schmidt hardness mode (normalized to horizontal impact direction)	12
	RSCH_RANG		0DP	Schmidt hardness range (normalized to horizontal impact direction)	3

Group Name: RSCH - Schmidt Rebound Hardness Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	RSCH_NUM		X	Number of determinations if less than 20 and reason	12 determinations – 10 consecutive readings differing by less than 4.

Group Notes

• None

Group Name: RSHR - Shore Scleroscope Hardness Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RSHR_SHOR		1DP	Average Shore hardness value	29.7
	RSHR_AXIS		X	Orientation of the test surface relative to bedding	
	RSHR_NUM		0DP	Number of tests conducted	20
	RSHR_REM		X	Remarks	
	RSHR_METH		X	Test method	ISRM: Suggested method for determination of Shore Scleroscope hardness
	RSHR_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RSHR_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RSHR_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: RTEN - Tensile Strength Testing					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RTEN_SDIA	mm	1DP	Specimen diameter	54.1
	RTEN_LEN	mm	1DP	Specimen thickness	27.2
	RTEN_MC	%	1DP	Water content of test specimen	3.7
	RTEN_COND		X	Condition of specimen as tested	Natural, saturated, dried at 105 DegC
	RTEN_DURN	mm:ss	T	Test duration	00:25
	RTEN_STRA	N/s	0DP	Stress rate	200
	RTEN_TENS	MPa	3SF	Tensile strength	50.1
	RTEN_MODE		PA	Mode of failure	Shear
	RTEN_MACH		X	Testing machine	Denison 7225
	RTEN_REM		X	Remarks	Thin card used between platens and test specimen
	RTEN_METH		X	Test method	ISRM: Suggested method for determination of indirect tensile strength by the Brazil test
	RTEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RTEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RTEN_DEV		X	Deviation from the specified procedure	

Group Notes

• None

Group Name: RUCS - Rock Uniaxial Compressive Strength and Deformability Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RUCS_SDIA	mm	1DP	Specimen diameter	86.7
	RUCS_LEN	mm	1DP	Specimen length	235.3
	RUCS_MC	%	1DP	Water content of specimen tested	3.7
	RUCS_COND		X	Condition of specimen as tested	Natural, saturated, dried at 105 DegC
	RUCS_DURN	mm:ss	T	Test duration	06:54
	RUCS_STRA	MPa/s	1DP	Stress rate	0.5
	RUCS_UCS	MPa	3SF	Uniaxial compressive strength	16.8
	RUCS_MODE		PA	Mode of failure	Shear
	~~**RUCS_E**~~	~~GPa~~	~~3SF~~	~~Young's modulus~~	~~221~~
	~~**RUCS_MU**~~		~~2DP~~	~~Poisson's ratio~~	~~0.32~~
	~~**RUCS_ESTR**~~		~~X~~	~~Stress level at which modulus has been measured~~	~~0-50%UCS, 20MPa~~
	~~**RUCS_ETYP**~~		~~PA~~	~~Method of determination of Young's modulus~~	~~SECANT~~
	RUCS_MACH		X	Type of testing machine	Denison 7225
	RUCS_REM		X	Remarks	Specimen tested outside required 2.5-3.0 diameter to length ratio
	RUCS_METH		X	Test method	ISRM: Suggested method for determination of Uniaxial Compressive Strength
	RUCS_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RUCS_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RUCS_DEV		X	Deviation from the specified procedure	
	RUCS_ESEC	GPa	3SF	Young's modulus, secant	221
	RUCS_ETAN	GPa	3SF	Young's modulus, tangent	213

	RUCS_EAVG	GPa	3SF	Young's modulus, average (mean)	196
	RUCS_SSEC		X	Stress level at which secant Young's modulus has been measured	50% UCS
	RUCS_STAN		X	Stress level at which tangent Young's modulus has been measured	50% UCS
	RUCS_SAVG		X	Stress level at which average (mean) Young's modulus has been measured	0-50% UCS
	RUCS_MUS		3SF	Poisson's ratio, secant	0.310
	RUCS_MUT		3SF	Poisson's ratio, tangent	0.330
	RUCS_MUAV		3SF	Poisson's ratio, average (mean)	0.320

Group Notes

• The units and accuracy for UCS are not prescribed in ISRM and the conventional MPa to 3SF is adopted here. ISRM defines GPa to 3SF for Young's modulus and as such this is also adopted.

• ISRM specifies stress rate MPa/s but most tests are performed at a rate of loading kN/s or kN/min, and sometimes under strain controlled conditions for deformability. The results should always be converted and reported as MPa/s where necessary.

• RUCS_E, RUCS_ESTR and RUCS_ETYP have been deprecated to allow for reporting of Young's modulus secant, tangent and average simultaneously.

• RUCS_MU has been deprecated to allow for reporting of Poisson's ratio secant, tangent and average simultaneously.

Group Name: RWCO - Water Content of Rock Tests

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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RWCO_MC	%	X	Water content	2.2
	RWCO_TEMP	DegC	0DP	Temperature sample dried at	60
	RWCO_REM		X	Remarks	
	RWCO_METH		X	Test method	ISRM: Suggested method for determining water content
	RWCO_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RWCO_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

Group Name: RWCO - Water Content of Rock Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RWCO_DEV		X	Deviation from the specified procedure	

Group Notes

• None

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		0DP	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	0DP	Sample diameter	100
	SAMP_WDEP	m	2DP	Depth to water below ground surface at time of sampling	4.50
	SAMP_RECV	%	0DP	Percentage of sample recovered	60
	SAMP_TECH		X	Sampling technique/method	Purged
	SAMP_MATX		X	Sample matrix	Surface water
	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

Group Name: SAMP - Sample Information					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	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
	SAMP_TEMP	DegC	0DP	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 (e.g. sampling field sheets, sample description records)	FS67
	SAMP_RECL	mm	0DP	Length of sample recovered	205

Group Notes

• The SAMP group is used to record all samples; e.g. 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 section 5.5.

• 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 BS EN ISO 14688-1, Section 6 and BS EN ISO 14689, 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. 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 BS EN ISO 14688-1 (Section 6) and BS EN ISO 14689 (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.

Group Name: SCDG - Static Cone Dissipation Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**SCPG_TESN**		X	Test reference or push number	3
*	**SCDG_DPTH**	m	2DP	Depth of dissipation test	5.205
	SCDG_PWPI	MPa	3DP	Measured or assumed initial pore water pressure	0.400
	SCDG_PWPE	MPa	3DP	Measured or assumed equilibrium pore water pressure	0.035
	SCDG_DDIS	%	0DP	Degree of dissipation for analysis	50
	SCDG_T	s	1DP	Time to achieve degree of dissipation stated in SCDG_DDIS	258.5
	SCDG_CV	m2/yr	2SCI	Coefficient of consolidation (vertical)	1.33E1
	SCDG_CVMT		X	Method(s) used to determine vertical coefficient of consolidation	C_h x 5
	SCDG_CH	m2/yr	2SCI	Coefficient of consolidation (horizontal)	8.64E-6
	SCDG_CHMT		X	Method(s) used to determine horizontal coefficient of consolidation	Houlsby and Teh
	SCDG_REM		X	Remarks	
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS19

Group Notes

• SCDG is to be used to record the general information relating to dissipation tests carried out during static cone penetrometer testing.

Group Name: SCDT - Static Cone Dissipation Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**SCPG_TESN**		X	Test reference or push number	3
*	**SCDG_DPTH**	m	2DP	Depth of dissipation test	5.205
*	**SCDT_SECS**	s	1DP	Seconds elapsed since start of test	50.5
	SCDT_RES	MPa	3DP	Cone resistance	0.801
	SCDT_PWP1	MPa	4DP	Face porewater pressure (u1)	
	SCDT_PWP2	MPa	4DP	Shoulder porewater pressure (u2)	0.0814
	SCDT_PWP3	MPa	4DP	Top of sleeve porewater pressure (u3)	
	SCDT_REM		X	Comments	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS19

Group Notes

• SCDT is used to include the dissipation test readings converted from the measurement data using any required calibration factors.

Group Name: SCPG - Static Cone Penetration Tests - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**SCPG_TESN**		X	Test reference or push number	3
	SCPG_TYPE		PA	Cone test type	PC
	SCPG_REF		X	Cone reference	S15.CFIP.A27
	SCPG_CSA	cm2	0DP	Surface area of cone tip	15
	SCPG_RATE	mm/s	0DP	Nominal rate of penetration of the cone	20
	SCPG_FILT		X	Type of filter material used	HDPE
	SCPG_FRIC		YN	Friction reducer used	Y
	SCPG_WAT	m	2DP	Groundwater level at time of test	3.50
	SCPG_WATA		X	Origin of water level in SCPG_WAT	Assumed from measurements in nearby boreholes
	SCPG_REM		X	Comments on testing and basis of any interpreted parameters included in SCPT and SCPP	
	SCPG_ENV		X	Details of weather and environmental conditions during test	Sunny
	SCPG_CONT		X	Subcontractors name	An Contractor Ltd
	SCPG_METH		X	Standard followed for testing	NEN 5140
	SCPG_CRED		X	Accrediting body and reference number (when appropriate)	
	SCPG_CAR		3DP	Cone area ratio used to calculate qt	0.810
	SCPG_SLAR		3DP	Sleeve area ratio used to calculate ft	1.001
	FILE_FSET		X	Associated file reference (e.g. cone calibration records)	FS18

Group Notes

• SCPG is used to record the general information about static cone penetration tests.

• Pressuremeter tests using CPT equipment (e.g. cone or driven pressuremeter) shall be recorded in the PMTG and associated groups.

• SCPG_FILT and SCPG_FRIC are included as they are reporting requirements of BS1377 and BS EN ISO 22476-1.

• SCPG_WATA is required to clarify origin of water level recorded in SCPG_WAT.

• SCPG_REM is used to transfer comments on the test and any interpreted parameters. SCPG_REM may refer to the STND group where full information on standards and references could be provided.

• CPT testing is frequently carried out by specialist sub-contractors. SCPG_CONT is included to record name of specialist sub-contractor.

• SCPG_CAR and SCPG_SLAR are included to transfer information used to calculate qt and ft.

Group Name: SCPP - Static Cone Penetration Tests - Derived Parameters					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**SCPG_TESN**		X	Test reference or push number	3
*	**SCPP_TOP**	m	2DP	Depth to top of layer	5.20
*	**SCPP_BASE**	m	2DP	Depth to base of layer	5.30
*	**SCPP_REF**		X	Interpretation reference	ACME CPT Testing Ltd
	SCPP_REM		X	Remarks	
	SCPP_CSBT		X	Interpreted Soil Type	3 - Clays
	SCPP_CSU	kPa	1DP	Undrained Shear Strength (Su); fine soils only	50.2
	SCPP_CRD	%	1DP	Relative density (Dr); coarse soils only	90.1
	SCPP_CPHI	deg	1DP	Internal Friction Angle; coarse soils only	42.7
	SCPP_CIC		1DP	Soil Behaviour Type Index (Ic)	1.5
	SCPP_CSPT		0DP	Equivalent SPT N60 value	32
	FILE_FSET		X	Associated file reference	FS18

Group Notes

• The SCPP group is to be used to transfer derived soil parameters determined from CPT test data. The requirement for this information as part of ground investigation reporting shall be full specified at the outset of the investigation. The specification may need to detail the interpretative method(s) to be used.

• The interpretation is given a reference in SCPP_REF that defines who and possibly how the interpretation has been carried out.

• Details of the standards and methods used to carry out calculations need to be included in SCPG_REM. SCPG_REM may in turn refer to the STND group where full information on standards and references may be provided.

• Where soil type interpretation leading to borehole style stratum descriptions is carried out the information should be entered in GEOL.

• The coefficient of consolidation is calculated from dissipation testing data which is included in SCDG and SCDT.

Group Name: SCPT - Static Cone Penetration Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**SCPG_TESN**		X	Test reference or push number	3
*	**SCPT_DPTH**	m	2DP	Depth of result	7.125
	SCPT_RES	MPa	3DP	Cone resistance (qc)	18.065
	SCPT_FRES	MPa	4DP	Local unit side friction resistance (fs)	0.0968
	SCPT_PWP1	MPa	4DP	Face porewater pressure (u1)	
	SCPT_PWP2	MPa	4DP	Shoulder porewater pressure (u2)	0.0118
	SCPT_PWP3	MPa	4DP	Top of sleeve porewater pressure (u3)	
	SCPT_CON	µS/cm	4DP	Conductivity	
	SCPT_TEMP	DegC	4DP	Temperature	8.4000
	SCPT_PH		4DP	pH reading	6.9000
	SCPT_SLP1	deg	4DP	Slope indicator no. 1	1.7136
	SCPT_SLP2	deg	4DP	Slope indicator no. 2	
	SCPT_REDX	mV	4DP	Redox potential reading	
	SCPT_MAGT	nT	4DP	Magnetic flux - Total (calculated)	
	SCPT_MAGX	nT	4DP	Magnetic flux - X	
	SCPT_MAGY	nT	4DP	Magnetic flux - Y	
	SCPT_MAGZ	nT	4DP	Magnetic flux - Z	
	SCPT_SMP	%	4DP	Soil moisture	
	SCPT_NGAM	counts/s	4DP	Natural gamma radiation	
	SCPT_REM		X	Remarks	
	SCPT_FRR	%	2DP	Friction ratio (Rf)	0.54
	SCPT_QT	MPa	4DP	Corrected cone resistance (qt) piezocone only	18.0668
	SCPT_FT	MPa	4DP	Corrected sleeve resistance (ft) piezocone only	0.1235
	SCPT_QE	MPa	4DP	Effective cone resistance (qe) piezocone only	18.0532
	SCPT_BDEN	Mg/m3	2DP	Bulk density of material (measured or assumed)	2.21
	SCPT_CPO	kPa	2DP	Total vertical stress (based on SCPT_BDEN)	210.46
	SCPT_CPOD	kPa	2DP	Effective vertical stress (calculated from SCPT_CPO and SCPT_ISPP or SCPG_WAT)	107.56
	SCPT_QNET	MPa	4DP	Net cone resistance (qn)	17.8563
	SCPT_FRRC	%	2DP	Corrected friction ratio (Rf') piezocone only	2.76
	SCPT_EXPP	MPa	4DP	Excess pore pressure (u-uo) piezocone only	-0.0911
	SCPT_BQ		4DP	Pore pressure ratio (Bq) piezocone only	-0.0051

Group Name: SCPT - Static Cone Penetration Tests - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SCPT_ISPP	MPa	4DP	In situ pore pressure (uo) (measured or assumed where not simple hydrostatic based on SCPG_WAT)	0.2000
	SCPT_NQT		4DP	Normalised cone resistance (Qt)	166.0125
	SCPT_NFR	%	4DP	Normalised friction ratio (Fr)	0.5423
	FILE_FSET		X	Associated file reference (e.g. raw field data)	FS18

Group Notes

• SCPT is used to include the readings from the cone converted from the measurement data using any required calibration factors and other mathematical formulae employed by the measurement contractor in accordance with the specification.

• Readings included in group will depend on the test carried out. For example, the ground parameters measured and included in this group will depend on test type / cone.

• The fluorescence intensity, photo-multiplier tube readings, PID, FID and conductivity data require graphic interpretation. These have been removed.

• SCPT_BDEN and SCPT_ISPP allow for complex assumptions on density and piezometric profiles. Explanation of these assumptions is required within SCPG_REM.

• The requirements for transfer of data in SCPT should be fully specified at the outset of testing in the investigation specification.

Group Name: SHBG - Shear Box Testing - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SHBG_TYPE		PA	Test type	SMALL SBOX
	SHBG_COND		PA	Sample condition	UNDISTURBED
	SHBG_CONS		X	Specific condition statements	Recompacted to specified density
	SHBG_PCOH	kPa	2SF	Peak cohesion intercept	5.1
	SHBG_PHI	deg	1DP	Peak angle of friction	26.5
	SHBG_RCOH	kPa	2SF	Residual cohesion intercept	1.3
	SHBG_RPHI	deg	1DP	Residual angle of friction	13.0
	SHBG_ENCA		X	Method of encapsulation of specimens tested	Resin

Group Name: SHBG - Shear Box Testing - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SHBG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	c' and phi' derived by linear regression, c' assumed zero etc
	SHBG_METH		X	Test method	BS1377 Part 7
	SHBG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	SHBG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS18
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	SHBG_DEV		X	Deviation from the specified procedure	

Group Notes

• Group SHBG and SHBT contain the processed results from soil or rock joint shear box tests. Raw data, such as the stresses and displacements at all points of the test are not included.

Group Name: SHBT - Shear Box Testing - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**SHBT_TESN**		X	Shear box stage/specimen reference	1
	SHBT_BDEN	Mg/m3	2DP	Initial bulk density	1.96
	SHBT_DDEN	Mg/m3	2DP	Initial dry density	1.63
	SHBT_NORM	kPa	0DP	Normal stress applied	100
	SHBT_DISP	mm/min	2SF	Displacement rate for peak stress stage	0.024
	SHBT_DISR	mm/min	2SF	Displacement rate for residual stress stage	0.12
	SHBT_REVS		0DP	Number of traverses if residual test	3
	SHBT_PEAK	kPa	1DP	Peak shear stress	65.5
	SHBT_RES	kPa	1DP	Residual shear stress	47.2

Group Name: SHBT - Shear Box Testing - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SHBT_PDIS	mm	2DP	Horizontal displacement at peak shear stress	2.35
	SHBT_RDIS	mm	2DP	Horizontal displacement at residual shear stress	12.41
	SHBT_PDIN	mm	2DP	Vertical displacement at peak shear stress	1.24
	SHBT_RDIN	mm	2DP	Vertical displacement at residual shear stress	-4.23
	SHBT_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	SHBT_IVR		3DP	Initial voids ratio	0.526
	SHBT_MCI	%	X	Initial water/moisture content	20
	SHBT_MCF	%	X	Final water/moisture content	18
	SHBT_DIA1	mm	2DP	Specimen diameter in direction of shear (rock joints)	85.21
	SHBT_DIA2	mm	2DP	Specimen diameter perpendicular to shear (rock joints)	89.34
	SHBT_HGT	mm	2DP	Specimen height	80.02
	SHBT_CRIT		X	Failure/residual strength criterion used	Stress ratio
	SHBT_REM		X	Remarks	Reached end of travel
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS18
	SHBT_PVST	kPa	0DP	Normal (vertical) stress at peak shear stress	100
	SHBT_RVST	kPa	0DP	Normal (vertical) stress at residual shear stress	125

Group Notes

• SHBT_PDIN & SHBT_RDIN - consolidation (flow of water out of specimen) to be reported as positive and dilatancy or swelling (flow of water into specimen) to be reported as negative.

Group Name: STND - Standards / Specifications					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**STND_REF**		X	Reference of standard	BS EN ISO 14688-1:2018
	STND_TTLE		X	Document Title	Geotechnical investigation and testing - Identification and classification of soil - Part 1: Identification and description
	STND_SCPE		X	Scope of data collected to this standard	Soil descriptions; field logging and laboratory test specimens
	STND_REM		X	Comments	
	FILE_FSET		X	Associated file reference (e.g. contract specific specifications)	FS1

Group Notes

• STND may be used to state a list of standards, specifications and other reference documents that define the methods to which data has been collected and reported. For example, BS EN ISO 14688-1 (Section 6) and BS EN ISO 14689 (Section 5) describes that it should be clearly stated that the descriptions are based on visual and manual identification.

• Information on the scope of the data collected to each standard is included in STND_SCPE.

Group Name: SUCT - Suction Tests					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SUCT_DIAM	mm	2DP	Specimen diameter	100.25
	SUCT_LEN	mm	2DP	Specimen length	99.65
	SUCT_COND		PA	Sample condition	UNDISTURBED
	SUCT_BDEN	Mg/m3	2DP	Initial bulk density	1.96
	SUCT_DDEN	Mg/m3	2DP	Initial dry density	1.63
	SUCT_MC	%	2SF	Initial water/moisture content	20
	SUCT_VAL	kPa	0DP	Suction value	50
	SUCT_REM		X	Remarks	
	SUCT_METH		X	Test method	BRE IP4/93, suction probe in triaxial
	SUCT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc

Group Name: SUCT - Suction Tests					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	SUCT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS98
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	SUCT_DEV		X		

Group Notes

• None.

Group Name: TNPC - Ten Per Cent Fines					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	TNPC_TESN		X	Test reference	1
	TNPC_DRY		X	10% fines values on dry aggregate	75
	TNPC_WET		X	10% fines values on wet aggregate	60
	TNPC_REM		X	Remarks	
	TNPC_METH		X	Test method	
	TNPC_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	TNPC_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS19
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	TNPC_DEV		X	Deviation from the specified procedure	

Group Notes

• None.

Group Name: TREG - Triaxial Tests - Effective Stress - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	TREG_TYPE		PA	Test type	CU
	TREG_COND		PA	Sample condition	UNDISTURBED
	TREG_COH	kPa	0DP	Cohesion intercept associated with TREG_PHI	
	TREG_PHI	deg	1DP	Angle of friction for effective shear strength triaxial test	32.0
	TREG_FCR		X	Failure criterion	Maximum deviator stress
	TREG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Peak stress ratio, side drains fitted
	TREG_METH		X	Test method	BS1377 pt 8
	TREG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	TREG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	TREG_DEV		X	Any deviation from the procedure or specified test conditions	

Group Notes

• TREG and TRET are to be used for the reporting of effective stress testing.

Group Name: TRET - Triaxial Tests - Effective Stress - Data					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**TRET_TESN**		X	Triaxial test/stage number	1
	TRET_SDIA	mm	2DP	Specimen diameter	38.25
	TRET_LEN	mm	2DP	Specimen length	76.50
	TRET_IMC	%	X	Specimen initial water/moisture content	15.5
	TRET_FMC	%	X	Specimen final water/moisture content	14.9
	TRET_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	TRET_DDEN	Mg/m3	2DP	Initial dry density	1.84
	TRET_SAT		X	Method of saturation	Back pressure, cell pressure, none
	TRET_CONS		X	Details of consolidation stage	Drainage to both ends with radial boundary
	TRET_CONP	kPa	0DP	Effective stress at end of consolidation/ start of shear stage	100
	TRET_CELL	kPa	0DP	Total cell pressure during shearing stage	400
	TRET_PWPI	kPa	0DP	Porewater pressure at start of shear stage	50
	TRET_STRR	%/hr	1DP	Rate of axial strain during shear	1.5
	TRET_STRN	%	1DP	Axial strain at failure	9.0
	TRET_DEVF	kPa	0DP	Deviator stress at failure	360
	TRET_PWPF	kPa	0DP	Porewater pressure at failure	60
	TRET_STV	%	2DP	Volumetric strain at failure (drained only)	2.56
	TRET_MODE		PA	Mode of failure	Brittle
	TRET_REM		X	Comments	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS7
	TRET_BACK	kPa	0DP	Final back pressure applied prior to shearing	300
	TRET_VERT	%	1DP	Vertical strain at end of consolidation	1.3
	TRET_VOLM	%	1DP	Volumetric strain at end of consolidation	1.2
	TRET_RATE	%/hr	1DP	Rate of volumetric strain immediately prior to shearing	0.3
	TRET_BVAL		2DP	Final B-value prior to shearing	0.95

Group Name: TRET - Triaxial Tests - Effective Stress - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	TRET_DRN		X	Type of drainage conditions during shear	Radial
	TRET_MEMB	kPa	0DP	Membrane corrections applied at failure	2
	TRET_FILC	kPa	0DP	Filter paper corrections applied at failure	1
	TRET_IVR		3DP	Initial voids ratio	0.796
	TRET_SATR	%	0DP	Saturation percentage	100
	TRET_CVP	kPa	0DP	Effective vertical pressure at end of consolidation	200
	TRET_CRP	kPa	0DP	Effective radial pressure at end of consolidation	100
	TRET_MEAN	kPa	0DP	Peak mean effective stress during shear	133
	TRET_CU	kPa	0DP	Undrained shear strength at failure	150
	TRET_EP50	%	2DP	Strain at 50 % peak deviator stress	3.22
	TRET_E50	MPa	2DP	Secant modulus at 50 % peak deviator stress	75.5

Group Notes

• The information in this group is only used in conjunction with the detailed laboratory reports.

• TRET_STV - consolidation (flow of water out of specimen) to be reported as positive and dilatancy or swelling (flow of water into specimen) to be reported as negative.

Group Name: TREM - Location Specific Time Related Remarks					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**TREM_DTIM**	yyyy-mm-ddThh:mm	DT	Date and time of remark or start of event	2001-05-16T12:00
	TREM_COMP		X	Component or sub-activity	Slab G12
	TREM_REM		X	Time related remark	Completion of concrete pour
	TREM_DURN	hh:mm:ss	T	Duration of event or activity	01:25:00
	TREM_ETIM	yyyy-mm-ddThh:mm	DT	Date and time of end of event	2001-05-16T12:30
	FILE_FSET		X	Associated file reference (e.g. site journal records)	FS28

Group Notes

• TREM_COMP allows comments to be related to specific activities or components of work occurring at the location given by LOCA_ID. This heading can be used to tag similar construction activities occurring at multiple locations or identify specific construction elements.

• TREM_DURN allows the length of time associated with a particular event to be included if this is appropriate.

Group Name: TRIG - Triaxial Tests - Total Stress - General					
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
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	TRIG_TYPE		PA	Test type	UU
	TRIG_COND		PA	Sample condition	UNDISTURBED
	TRIG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	
	TRIG_METH		X	Test method	BS EN ISO 17892-8
	TRIG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	TRIG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	TRIG_DEV		X	Deviation from the specified procedure	

Group Notes

• The data reported from total and effective stress testing is different therefore TREG and TRET has been added for the reporting of effective stress testing. LUCT should be used for Laboratory Unconfined Compression Tests

• Standard testing methods normally report the Cu value against each test specimen and defer from providing an assessed Cu value for a set of specimens from a sample. This data is therefore included in the TRIT group.

Group Name: TRIT - Triaxial Tests - Total Stress - Data					
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

Group Name: TRIT - Triaxial Tests - Total Stress - Data					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**SAMP_ID**		ID	Sample unique identifier	ABC121415010
*	**SPEC_REF**		X	Specimen reference	1a
*	**SPEC_DPTH**	m	2DP	Depth to top of test specimen	24.55
*	**TRIT_TESN**		X	Triaxial test/stage reference	1
	TRIT_SDIA	mm	2DP	Specimen diameter	38.25
	TRIT_SLEN	mm	2DP	Specimen length	76.45
	TRIT_IMC	%	X	Specimen initial water/moisture content	15.7
	TRIT_FMC	%	X	Specimen final water/moisture content	14.9
	TRIT_CELL	kPa	0DP	Total cell pressure	100
	TRIT_DEVF	kPa	0DP	Corrected deviator stress at failure	360
	TRIT_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	TRIT_DDEN	Mg/m3	2DP	Initial dry density	1.84
	TRIT_STRN	%	2SF	Axial strain at failure	9.5
	TRIT_CU	kPa	0DP	Undrained Shear Strength at failure	180
	TRIT_MODE		PA	Mode of failure	Brittle
	TRIT_REM		X	Comments	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS7
	TRIT_FZWC	%	X	Failure zone water content, if measured	14.7
	TRIT_RATE	%/min	2SF	Mean rate of shear	1.5

Group Notes

• Individual stage undrained shear strength values should be included as TRIT_CU. Interpretation is usually beyond the remit of the geotechnical testing laboratory.

• The information in this group is only used in conjunction with the detailed laboratory reports.

Group Name: WADD - Water Added Records					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**WADD_TOP**	m	2DP	Depth to top of reported section	10.50
*	**WADD_BASE**	m	2DP	Depth to base of reported section	20.50
	WADD_VOLM	l	0DP	Amount of water added	10
	WADD_METH		X	Boring/drilling method associated with addition of water (HDPH_TYPE abbreviation)	CP

Group Name: WADD - Water Added Records					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
	WADD_REM		X	Remarks related to addition of water requirements, method	
	FILE_FSET		X	Associated file reference (e.g. drilling journal)	FS20

Group Notes

• WADD is to be used to record details of water added to exploratory holes.

Group Name: WETH - Weathering					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**WETH_TOP**	m	2DP	Depth to top of weathering subdivision	3.50
*	**WETH_BASE**	m	2DP	Depth to base of weathering subdivision	3.95
	WETH_SCH		PA	Weathering scheme	BS 5930
	WETH_SYS		PA	Material or mass weathering system	MASS CLASS
	WETH_WETH		X	Weathering classifier for WETH_SCH and WETH_SYS	B
	WETH_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. logging sheets)	FS4

Group Notes

• WETH_SCH and WETH_SYS are used to identify the weathering scheme utilised and whether it is the material or mass that is described in accordance with BS 5930.

• This means that as well as special descriptions specific to rock types (e.g. in the UK: Southern Province White Chalk Subgroup, Mercia Mudstone Group) other systems can be used. This then allows the use of:

Grades = I to VI, Zones = 1 to 6, Classes = A to E, for example, or more complex classifiers. These are all systems/methods currently practised in the UK. The BS and EN refer to weathering of rocks but there have also been weathering classifications derived for soils (Solid strata on BGS maps) such as the London Clay.

Group Name: WGPG - Wireline Geophysics - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**WGPG_ID**		X	Test reference	327-16A -Pass01
*	**WGPG_TOOL**		PA	Tool used	TGRA
	WGPG_DATE	yyyy-mm-dd	DT	Test date	1999-07-02
	WGPG_STRT	m	2DP	Test start depth	14.10
	WGPG_STOP	m	2DP	Test stop depth	24.56
	WGPG_BHD	m	2DP	Depth of borehole	25.85
	WGPG_WAT	m	XN	Depth of water in borehole	4.36
	WGPG_DETL		X	Details of instrument	
	WGPG_LIM		U	Instrument/method reading/detection limit	
	WGPG_ULIM		U	Instrument/method upper reading detection (when appropriate)	
	WGPG_CDIA		X	Casing internal diameter as reported by drillers	From 0 to 10m : 200mm - From 0 to 30m: 90mm
	WGPG_REM		X	Remarks	
	WGPG_ENV		X	Details of weather and environmental conditions during test	
	WGPG_METH		X	Measurement method	
	WGPG_CONT		X	Contractor who undertook testing	ACME Instruments Ltd
	WGPG_CRED		X	Accrediting body and reference number (Where appropriate)	
	WGPG_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS01

Group Notes

• WGPG_TOOL abbreviations could be the name of the test reference. Examples of WGPG_CODE include: SGR – Spectral Gamma, CAL3 – 3 arm calliper

• Good practice dictates that Instrument method, upper reading detection limits are provided as part of the appendix of the test

• WGPG_CDIA is intentionally a text field recording the information provided to the wireline surveyors from the drilling operations to compare it to the information reported in CDIA (Casing Diameter by Depth) group.

• WGPG_STRT shall report the test top depth and WGPG_STOP shall report the base depth, irrespective of direction the test was run.

Group Name: WGPT - Wireline Geophysics - Readings					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**WGPG_ID**		X	Test reference	327-16A -Pass01
*	**WGPG_TOOL**		PA	Tool used	OBI
*	**WGPT_PARA**		PA	Parameter recorded by tool WGPG_TOOL	OBI_EAST
*R	**WGPT_UNIT**		PU	Test result units	m
*	**WGPT_DPTH**		2DP	Depth of reading	10.45
	WGPT_RDNG		U	Reading	123.321, 2000 or 0.0023
	WGPT_CAS		PA	Borehole casing details at depth of reading	OH
	WGPT_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS01

Group Rules

• Where a reading has no unit, the WGPT_UNIT data shall be set to "UNITLESS".

• Units included in WGPT_UNIT shall be fully defined in the UNIT group (Rule 15), the unit group is case sensitive.

• Data type for data field heading WGPT_UNIT shall not be changed from PU.

Group Notes

• WGPT_CAS defines if the reading was carried out in open hole, cased hole, PVC cased. Example of WGPT_CAS include: OH = Open hole; CH = Cased hole; PVC = PVC cased; 6IN = 6 inch casing; PQ = PQ size casing; SLOT = Slotted casing

• Refer to parent group for definition of WGPG_TOOL.

Tool Used (WGPG_TOOL)	Tool	Recorded Parameter (WGPT_PARA)	Parameter Name	Expected Unit
WTEN	Winch Tension	WTEN-LT	Logging Tension	kg
NGR	Natural Gamma	NGR-NGA	Total natural Gamma in API	API
		NGR-NGC	Total natural Gamma in counts/s	counts/s
		NGR-CV	Clay Volume NGR	%
SGR	Spectral Gamma	SGR-TGA	Total Gamma in API	API
		SGR-TGC	Total Gamma in counts/s	counts/s
		SGR-PC	Potassium Concentration	%
		SGR-UC	Uranium Concentration	ppm
		SGR-TC	Thorium Concentration	ppm
		SGR-CV	Clay Volume SGR	%
		SGR-CCV	Corrected Clay Volume SGR (excl. Uranium)	%
CAL3	Three arm Calliper	CAL3-BHD	Average Borehole Diameter	mm

CALX-Y	Calliper X-Y (2 x two arm Calliper)	CALXY-BDX	Borehole Diameter X	mm
		CALXY-BDY	Borehole Diameter Y	mm
CAL4	Four Arm Calliper	CAL4-BRX1	Borehole Radii X1	mm
		CAL4-BRX2	Borehole Radii X2	mm
		CAL4-BRY1	Borehole Radii Y1	mm
		CAL4-BRY2	Borehole Radii Y2	mm
		CAL4-X1P	X1 Position	deg
DFEL	Dual Focused Resistivity	DFEL-FRD	Focused Resistivity Deep	Ohm m
		DFEL-FRS	Focused Resistivity Shallow	Ohm m
ELOG	Normal Resistivity	ELOG-RES8	8" Resistivity	Ohm m
		ELOG-RES16	16" Resistivity	Ohm m
		ELOG-RES32	32" Resistivity	Ohm m
		ELOG-RES64	64" Resistivity	Ohm m
DIEL	Dual Induction	DIEL-CD	Conductivity Deep	mS/m
		DIEL-CS	Conductivity Shallow	mS/m
FC	Fluid Conductivity	FC-FC	Fluid Conductivity	uS/cm
BT	Borehole Temperature	BT-T	Temperature	DegC
IPFL	Impeller/Spinner Flowmeter	IPFL-DRAT	Spinner / Impeller rotation rate - Dynamic	rps
		IPFL-SRAT	Spinner / Impeller rotation rate - Stationary	rps
		IPFL-CS	Logging / Cable Speed	m/min
		IPFL-FR	Flow Rate	l/s
HPFL	Heat Pulse Flowmeter	HPFL-FR	Flow Rate	l/s
		HPFL-TTD	Thermistor Temperature Difference	counts/s
		HPRL-TCD	Time from Capacitor Discharge	sec
GGD	Dual Gamma Density	GGD-DS	Density Short	g/cm3
		GGD-DL	Density Long	g/cm3
		GGD-BD	Bulk Density	g/cm3
		GGD-GS	Gamma Short	counts/s
		GGD-GL	Gamma Long	counts/s
		GGD-SC	Sidewall Calliper	mm
NTR	Dual Neutron	NTR-LPPU	Limestone Equivalent Porosity	pu
		NTR-SPPU	Sandstone Equivalent Porosity	pu
		NTR-LPPC	Limestone Equivalent Porosity	%
		NTR-SPPC	Sandstone Equivalent Porosity	%
		NTR-NPPC	Neutron Porosity	%
		NTR-NPPU	Neutron Porosity q	pu

DMR	Downhole Magnetic Resonance	DMR-TP	Total Porosity	%
		DMR-CLBWV	Clay bound water volume	%
		DMR-CBWV	Capillary bound water volume	%
		DMR-FMWV	Free or mobile water volume	%
		DMR-HPSD1	Estimated Hydraulic Permeability SDR q1	mD
		DMR-HPT1	Estimated Hydraulic Permeability TIM q1	mD
		DMR-HPSO1	Estimated Hydraulic Permeability SOE q1	mD
		DMR-HPSD2	Estimated Hydraulic Permeability SDR q2	m/day
		DMR-HPT2	Estimated Hydraulic Permeability TIM q2	m/day
		DMR-HPSO2	Estimated Hydraulic Permeability SOE q2	m/day
		DMR-HPSD3	Estimated Hydraulic Permeability SDR q3	m/s
		DMR-HPT3	Estimated Hydraulic Permeability TIM q3	m/s
		DMR-HPSO3	Estimated Hydraulic Permeability SOE q3	m/s
		DMR-MC	Moisture Content	%
		DMR-T2LM	T2 Logarithmic Mean	ms
BDEV	Borehole Deviation	BDEV-BT	Borehole Tilt	deg
		BDEV-BAM	Borehole Azimuth Magnetic Sensor	deg
		BDEV-BAG	Borehole Azimuth Gyro	deg
		BDEV-EAST	Easting	m
		BDEV-NORT	Northing	m
		BDEV-TVD	Total Vertical Depth (TVD)	m
OBI	Optical Borehole Imager	OBI-BT	Borehole Tilt	deg
		OBI-BAM	Borehole Azimuth Magnetic Sensor	deg
		OBI-EAST	Easting	m
		OBI-NORT	Northing	m
		OBI-TVD	TVD	m
		OBI-MF	Magnetic Field	µT
		OBI-SDIP	Structure Dip	deg
		OBI-SAM	Structure Azimuth Magnetic	deg
ABI	Acoustic Borehole Imager	ABI-BT	Borehole Tilt	deg
		ABI-BAM	Borehole Azimuth Magnetic Sensor	deg
		ABI-EAST	Easting	m
		ABI-NORT	Northing	m
		ABI-TVD	TVD	m
		ABI-MF	Magnetic Field	µT
		ABI-SDIP	Structure Dip	deg

		ABI-SAM	Structure Azimuth Magnetic	deg
		ABI-SAP	Structure Aperture	mm
		ABI-ARQD	Acoustic-RQD	UNITLESS
		ABI-CMAX	Calliper Max	mm
		ABI-CMIN	Calliper Min	mm
		ABI-CAVE	Calliper Ave	mm
FWS	Full Waveform Sonic	FWS-PTR1T1	P-Wave TT Rx1-Tx1	uS
		FWS-PTR2T1	P-Wave TT Rx2-Tx1	uS
		FWS-PTR3T1	P-Wave TT Rx3-Tx1	uS
		FWS-PTR4T1	P-Wave TT Rx4-Tx1	uS
		FWS-PTR1T2	P-Wave TT Rx1-Tx2	uS
		FWS-PTR2T2	P-Wave TT Rx2-Tx2	uS
		FWS-PTR3T2	P-Wave TT Rx3-Tx2	uS
		FWS-PTR4T2	P-Wave TT Rx4-Tx2	uS
		FWS-STR1T1	S-Wave TT Rx1-Tx1	uS
		FWS-STR2T1	S-Wave TT Rx2-Tx1	uS
		FWS-STR3T1	S-Wave TT Rx3-Tx1	uS
		FWS-STR4T1	S-Wave TT Rx4-Tx1	uS
		FWS-STR1T2	S-Wave TT Rx1-Tx2	uS
		FWS-STR2T2	S-Wave TT Rx2-Tx2	uS
		FWS-STR3T2	S-Wave TT Rx3-Tx2	uS
		FWS-STR4T2	S-Wave TT Rx4-Tx2	uS
		FWS-PDEL	Propagation Delay	uS/ft
		FWS-DTP	dtp	uS/ft
		FWS-DTS	dts	uS/ft
		FWS-PWV	P-Wave Velocity	m/s
		FWS-SWV	S-Wave Velocity	m/s
		FWS-ART1	Amplitude Rx1-Tx1	UNITLESS
		FWS-ART2	Amplitude Rx1-Tx2	UNITLESS
		FWS-PORA	Poisson's Ratio	UNITLESS
		FWS-VRAT	V_p/V_s Ratio	UNITLESS
		FWS-CBI	Cement Bond Index in Steel Casing	UNITLESS
PSL	P & S Wave Suspension Logger	PSL-PWV	P-Wave Velocity	m/s
		PSL-SWV	S-Wave Velocity	m/s
MSUS	Magnetic Susceptibility	MSUS-FS	Formation Susceptibility	UNITLESS

Group Name: WINS - Window or Windowless Sampling Run Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**WINS_TESN**		X	Sampler run reference	2
*	**WINS_TOP**	m	2DP	Top of sampling run	17.20
*	**WINS_BASE**	m	2DP	Base of sampling run	20.00
	WINS_DIAM	mm	0DP	Internal diameter of sampler	97
	WINS_DURN	hh:mm:ss	T	Duration of sampling run	00:30:00
	WINS_REC	%	0DP	Sample recovery	50
	WINS_REM		X	Remarks about sampling run	
	FILE_FSET		X	Associated file reference (e.g. field records)	FS28

Group Notes

• WINS is used to record the details of window sampling runs.

Group Name: WSTG - Water Strike - General					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**WSTG_DPTH**	m	2DP	Depth to water strike	17.20
	WSTG_DTIM	yyyy-mm-ddThh:mm	DT	Date and time of water strike	1991-03-19T16:40
	WSTG_SEAL	m	2DP	Depth at which water strike sealed by casing	19.10
	WSTG_CAS	m	2DP	Casing depth at time of water strike	15.70
	WSTG_REM		X	Remarks	Steady flow of water into hole
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS28

Group Notes

• WSTG and WSTD are used to record information on the behaviour of water encountered during development of an exploratory hole.

• Water levels recorded during sampling or testing in exploratory holes are recorded in the appropriate group together with the related data. Water readings in installations (e.g. piezometers) are recorded in Group MOND.

Group Name: WSTD - Water Strike - Details					
Status	**Heading**	**Suggested Unit / Type**		**Description**	**Example**
*	**LOCA_ID**		ID	Location identifier	327-16A
*	**WSTG_DPTH**	m	2DP	Depth to water strike	17.20
*	**WSTD_NMIN**	min	0DP	Minutes after strike	20
	WSTD_POST	m	2DP	Depth to water after WSTD_NMIN minutes	10.23
	WSTD_REM		X	Remarks	
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS28

Group Notes

• See notes provided with WSTG.

4 TRANSFER FILE FORMAT

It is intended that other AGS Data Management Working Group approved file formats will be included in future versions of the AGS Format.

4.1 CSV File (comma separated value)

The default AGS4.1 file format uses a series of data groups in CSV format. The file itself is not compliant with the CSV specification RFC 4180, but it is typically referred to as CSV.

4.1.1 CSV File Rules

The following rules shall be followed in the preparation of AGS4.1 CSV format files.

Rule Ref	Rule Description
Rule 1	The data file shall be entirely composed of ASCII characters.
Rule 2	Each data file shall contain one or more data GROUPs. Each data GROUP shall comprise a number of GROUP HEADER rows and must have one or more DATA rows.
Rule 2a	Each row is located on a separate line, delimited by a new line consisting of a carriage return (ASCII character 13) and a line feed (ASCII character 10).
Rule 2b	The GROUP HEADER rows fully define the data presented within the DATA rows for that group (Rule 8). As a minimum, the GROUP HEADER rows comprise GROUP, HEADING, UNIT and TYPE rows presented in that order.
Rule 3	Each row in the data file must start with a DATA DESCRIPTOR that defines the contents of that row. The following Data Descriptors are used as described below: • Each GROUP row shall be preceded by the "GROUP" Data Descriptor. • Each HEADING row shall be preceded by the "HEADING" Data Descriptor. • Each UNIT row shall be preceded by the "UNIT" Data Descriptor. • Each TYPE row shall be preceded by the "TYPE" Data Descriptor. • Each DATA row shall be preceded by the "DATA" Data Descriptor.
Rule 4	Within each GROUP, the DATA items are contained in data FIELDs. Each data FIELD contains a single data VARIABLE in each row. Each DATA row of a data file will contain one or more data FIELDs. The GROUP row contains only one DATA item, the GROUP name, in addition to the Data Descriptor (Rule 3). All other rows in the GROUP have a number of DATA items defined by the HEADING row.
Rule 5	DATA DESCRIPTORS, GROUP names, data field HEADINGs, data field UNITs, data field TYPEs, and data VARIABLEs shall be enclosed in double quotes ("..."). Any quotes within a data item must be defined with a second quote e.g. "he said ""hello""".

Rule Ref	Rule Description
Rule 6	The DATA DESCRIPTORS, GROUP names, data field HEADINGs, data field UNITs, data field TYPEs, and data VARIABLEs in each line of the data file shall be separated by a comma (,). No carriage returns (ASCII character 13) or line feeds (ASCII character 10) are allowed in or between data VARIABLEs within a DATA row.
Rule 7	The order of data FIELDs in each line within a GROUP is defined at the start of each GROUP in the HEADING row. HEADINGs shall be in the order described in the AGS FORMAT DATA DICTIONARY.
Rule 8	Data VARIABLEs shall be presented in the units of measurement and type that are described by the appropriate data field UNIT and data field TYPE defined at the start of the GROUP within the GROUP HEADER rows.
Rule 9	Data HEADING and GROUP names shall be taken from the AGS FORMAT DATA DICTIONARY. In cases where there is no suitable entry, a user-defined GROUP and/or HEADING may be used in accordance with Rule 18. Any user-defined HEADINGs shall be included at the end of the HEADING row after the standard HEADINGs in the order defined in the DICT group (see Rule 18a).
Rule 10	HEADINGs are defined as KEY, REQUIRED or OTHER. • KEY fields are necessary to uniquely define the data. • REQUIRED fields are necessary to allow interpretation of the data file. • OTHER fields are included depending on the scope of the data file and availability of data to be included.
Rule 10a	In every GROUP, certain HEADINGs are defined as KEY. There shall not be more than one row of data in each GROUP with the same combination of KEY field entries. KEY fields must appear in each GROUP, but may contain null data (see Rule 12).
Rule 10b	Some HEADINGs are marked as REQUIRED. REQUIRED fields must appear in the data GROUPs where they are indicated in the AGS FORMAT DATA DICTIONARY. These fields require data entry and cannot be null (i.e. left blank or empty).
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.
Rule 11	HEADINGs defined as a data TYPE of 'Record Link' (RL) can be used to link data rows to entries in GROUPs outside of the defined hierarchy (Rule 10c) or DICT group for user defined GROUPs. The GROUP name followed by the KEY FIELDs defining the cross-referenced data row, in the order presented in the AGS4 DATA DICTIONARY.

Rule Ref	Rule Description
Rule 11a	Each GROUP/KEY FIELD shall be separated by a delimiter character. This single delimiter character shall be defined in TRAN_DLIM. The default being "|" (ASCII character 124).
Rule 11b	A heading of data TYPE 'Record Link' can refer to more than one combination of GROUP and KEY FIELDs. The combination shall be separated by a defined concatenation character. This single concatenation character shall be defined in TRAN_RCON. The default being "+" (ASCII character 43).
Rule 11c	Any heading of data TYPE 'Record Link' included in a data file shall cross-reference to the KEY FIELDs of data rows in the GROUP referred to by the heading contents.
Rule 12	Data does not have to be included against each HEADING unless REQUIRED (Rule 10b). The data FIELD can be null; a null entry is defined as "" (two quotes together).
Rule 13	Each data file shall contain the PROJ GROUP which shall contain only one data row and, as a minimum, shall contain data under the headings defined as REQUIRED (Rule 10b).
Rule 14	Each data file shall contain the TRAN GROUP which shall contain only one data row and, as a minimum, shall contain data under the headings defined as REQUIRED (Rule 10b).
Rule 15	Each data file shall contain the UNIT GROUP to list *all* units used within the data file. Every unit of measurement entered in the UNIT row of a GROUP or data entered in a FIELD where the field TYPE is defined as "PU" (for example ELRG_RUNI, GCHM_UNIT or MOND_UNIT FIELDs) shall be listed and defined in the UNIT GROUP.
Rule 16	Each data file shall contain the ABBR GROUP when abbreviations have been included in the data file. The abbreviations listed in the ABBR GROUP shall include definitions for all abbreviations entered in a FIELD where the data TYPE is defined as "PA" or any abbreviation needing definition used within any other heading data type.
Rule 16a	Where multiple abbreviations are required to fully codify a FIELD, the abbreviations shall be separated by a defined concatenation character. This single concatenation character shall be defined in TRAN_RCON. The default being "+" (ASCII character 43) Each abbreviation used in such combinations shall be listed separately in the ABBR GROUP. e.g. "CP+RC" must have entries for both "CP" and "RC" in ABBR GROUP, together with their full definition.
Rule 17	Each data file shall contain the TYPE GROUP to define the field TYPEs used within the data file. Every data type entered in the TYPE row of a GROUP shall be listed and defined in the TYPE GROUP.

Rule Ref	Rule Description
Rule 18	Each data file shall contain the DICT GROUP where non-standard GROUP and HEADING names have been included in the data file.
Rule 18a	The order in which the user-defined HEADINGs are listed in the DICT GROUP shall define the order in which these HEADINGS are appended to an existing GROUP or appear in a user-defined GROUP. This order also defines the sequence in which such HEADINGS are used in a heading of data TYPE 'Record Link' (Rule 11).
Rule 19	A GROUP name shall not be more than 4 characters long and shall consist of uppercase letters and numbers only.
Rule 19a	A HEADING name shall not be more than 9 characters long and shall consist of uppercase letters, numbers or the underscore character only.
Rule 19b	HEADING names shall start with the GROUP name followed by an underscore character .e.g. "NGRP_HED1" Where a HEADING refers to an existing HEADING within another GROUP, the HEADING name added to the group shall bear the same name. e.g. "CMPG_TESN" in the "CMPT" GROUP.
Rule 20	Additional computer files (e.g. digital images) can be included within a data submission. Each such file shall be defined in a FILE GROUP. The additional files shall be transferred in a sub-folder named FILE. This FILE sub-folder shall contain additional sub-folders each named by the FILE_FSET reference. Each FILE_FSET named folder will contain the files listed in the FILE GROUP.

4.1.2 CSV File Example

The following is an example of AGS 4.1 Format. This demonstrates the basics of the format construct and is not a complete set of data.

```
"GROUP","PROJ"
"HEADING","PROJ_ID","PROJ_NAME","PROJ_LOC","PROJ_CLNT","PROJ_CONT","PROJ_ENG"
"UNIT","","","","","","","
"TYPE","ID","X","X","X","X","X"
"DATA","121415","ACME Gas Works Redevelopment","Anytown","ACME Enterprises","ACME Drilling Ltd","ACME Consulting"

"GROUP","TRAN"
"HEADING","TRAN_ISNO","TRAN_DATE","TRAN_PROD","TRAN_STAT","TRAN_DESC","TRAN_AGS","TRAN_RECV","TRAN_DLIM","TR
AN_RCON"
"UNIT","","yyyy-mm-dd","","","","","","","","
"TYPE","X","DT","X","X","X","X","X","X","X"
"DATA","1","2020-08-18","ACME Drilling Ltd","DRAFT","Draft Logs only","4.1","ACME Consulting","|","+"

"GROUP","TYPE"
"HEADING","TYPE_TYPE","TYPE_DESC"
"UNIT","","
"TYPE","X","X"
"DATA","ID","Unique Identifier”
"DATA","X,"Text"
"DATA","PA,"Text listed in ABBR Group”
"DATA","DT","Date time in international format "
"DATA","2DP","Value; 2 decimal places"

"GROUP","UNIT"
"HEADING","UNIT_TYPE","UNIT_DESC"
"UNIT","","
"TYPE","X","X"
"DATA","m","metres"
"DATA","yyyy-mm-dd","year month day"

"GROUP","LOCA"
"HEADING","LOCA_ID","LOCA_NATE","LOCA_NATN"
"UNIT","","m","m"
"TYPE","ID","2DP","2DP"
"DATA","327-16A","523145.00","178456.12"

"GROUP","SAMP"
"HEADING","LOCA_ID","SAMP_TOP","SAMP_REF","SAMP_TYPE","SAMP_ID","SAMP_BASE","SAMP_CONT"
"UNIT","","m","","","","m","
"TYPE","ID","2DP","X","PA","ID","2DP","X"
"DATA","327-16A","24.55","24","U","ABC121415010","25.00",""
```

5 NOTES ON THIS DOCUMENT

5.1 Data Management

Refer to BS 8574:2014 'Code of practice for the management of geotechnical data for ground engineering projects' and the project or organization specific data management plan.

5.2 Headings, Key and Required Fields

The data HEADINGs should be considered as the equivalent of a field name within a database. However, the term HEADING is used within the rules to highlight that this document defines a data transfer format and not a database schema.

KEY Headings are important for maintaining data integrity. Without this, the receiving software may not be able to create the inter-relationships within the data in a meaningful way.

REQUIRED Headings (Rule 10b) are necessary to interpret the data file. Without data in these headings the user or receiving software may not be able to access the data or process the information within.

Note that there is no requirement to include all HEADINGs in a GROUP. The general approach should be to only include the HEADINGs for which data is required or provided (Rule 10). This is subject to meeting the requirement to include all KEY and REQUIRED headings (Rules 10a and 10b).

5.3 Units and Data Types

Units of measurement and data types for each of the HEADINGs are given in the Data Dictionary (3.4). These represent the typical units of measurement that are used in the UK. They will either be the appropriate SI units or the unit defined by the particular Eurocode or British Standard relating to the measurement data under that specific HEADING.

It is recognised that situations will occur where neither the SI unit nor the suggested unit of measurement are appropriate. In these cases, the unit of measurement and/or data TYPE for the results presented may be changed from the one shown in this document and the results presented according to the revised data UNIT / data TYPE.

5.4 Sample Referencing

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 (Rule 12).

SAMP_ID should be provided by the sample creator / generated at sample creation time – this should not be created by the testing laboratory.

Note: When a sample is received at a geoenvironmental laboratory ELRG_LSID is the sample ID created by the laboratory, assigned to each sample when received at the laboratory, allowing the laboratory to assign an identifier in addition to the SAMP Group keyset provided by the client. This enables a 1-to-1 relationship between client and laboratory sample referencing systems. The laboratory sample identifier can be assigned to multiple containers:

i.e. for a single environmental water (EW) sample, comprising multiple vials and jars, there is only one laboratory sample identifier that refers to this group of samples.

This approach is extended to all GROUPs that are descended from SAMP in the group hierarchy (section 3.1).

5.5 Record Linking

A data TYPE of 'Record Link' in the SAMP group (Heading SAMP_LINK) links sample data to other data records; in particular the sample source; for example, a monitoring instrument or test that created the sample. This provides the data receiver with additional information that is used to interpret testing data related to the sample.

The reference within a Record Link data variable is formed as defined in Rule 11 of:

- GROUP
- The data under the KEY HEADINGs in the order defined in the Data Dictionary (or DICT GROUP for user defined groups)
- Each component of the link being separated by a delimiter of "|" (the pipe character, ASCII Character 124).

For example: "SAMP|BH1|4.50|1|D|UX123"

where SAMP = The Sample data group
BH1 = LOCA_ID
4.50 = SAMP_TOP
1 = SAMP_REF
D = SAMP_TYPE
UX123 = SAMP_ID

This facility allows a link to exist between a sample and a monitoring point or other process / test such as the SPT.

Multiple links can be created by concatenation using the separator defined in TRAN_RCON (default being "+", ASCII Character 43).

Examples:

- "MONG|BH1|Pipe1" links a sample to the specific monitoring point of its origin.
- "ISPT|BH1|4.50+CDIA|BH1|2.00|200" links a sample to the SPT test from which the sample was derived and also references the casing depth at the time of sampling.

The simplicity or complexity of the link depends on user requirements or specification.

5.6 Associated files

Where other digital files or file sets are associated with data, the file association (FILE_FSET) should be made with the relevant data type and record. Further implementation notes are available on the website.

For example:

- Site location plans would be associated with the PROJ group.
- Photographs of core should be recorded against the core run records within the CORE group.
- Sample logging sheets if included with the data file would be associated with the SAMP group and against the relevant sample.
- Logging files from in situ tests should be associated with the appropriate test group.
- Test specimen photographs (e.g. pre-test, post-test UCS with the RUCS group).

5.7 Internal, Preliminary, Draft and Final Data Submission

The use of the following terms as defined in this document:

- Internal For use within your own organization
- Preliminary Unchecked and incomplete
- Draft Substantially complete and checked prior to final acceptance
- Final Complete submission with comments agreed and actioned

The status of TRAN_STAT and LOCA_STAT should be agreed in accordance with the recommendations of BS 8574:2014 and all parties involved.

Preliminary data in electronic format can be useful on projects where design is undertaken during the period of the investigation. However, the need for this facility should be very carefully considered by the receivers before including it in their Contract Specifications since it will require the imposition of rigorous data management procedures. The format is not intended to show change in data. Where the highlighting of change is required, this

should be a facility incorporated in the receiver's software. This does not preclude submission of parts of the data separately.

Each submission should be given a unique issue sequence reference (TRAN_ISNO). AGS Format includes the transmittal group, TRAN, to manage this process and include information about the data transfer within the transferred file.

5.8 AGS Data Transmittal Record

The Producer shall produce an external transmittal record for each submission of AGS Format data and associated files with the minimum following details:

The heading 'AGS Format Data'

The project identification (PROJ_ID)

The unique issue sequence reference (TRAN_ISNO)

The name of the Receiver (TRAN_RECV)

The date of issue to the Receiver (TRAN_DATE)

The name of the Producer (TRAN_PROD)

The AGS Edition Reference (TRAN_AGS)

A general description of the data transferred and/or a file listing for associated files

In addition the transmittal record will detail the following for each AGS Format data file within the data submission, including all associated files:

The file name including the extension

The date of file creation

The time of file creation

The file size

A general description of the data contained in each file and/or a file listing for associated files

A transmittal record should be prepared for each data set and accompany it each time a data set is issued. An example can be found in section 6 Additional Resources.

6 ADDITIONAL RESOURCES

The AGS Format website address is www.agsdataformat.com.

It contains this publication, in Adobe PDF, together with the latest AGS Format abbreviations (ABBR) and other resources to assist those using the format or developing software applications to interpret AGS Format data files. The site also contains a discussion board where users can discuss questions with the AGS Data Management Working Group members and other users.

6.1 Guidance and Example AGS data files

Guidance on the recommended usage of the AGS Format is published on the website (www.agsdataformat.com).

In addition, example AGS data files are posted on the website. The example files provide practical demonstration of the format.

6.2 AGS Format Abbreviations (ABBR), Units (UNIT) and Data Types (TYPE)

The abbreviations, units and data types for each heading are provided in the Data Dictionary. The abbreviations, units and data types in the data dictionary should be used unless otherwise agreed between data provider and receiver in accordance with a project specification.

The list of standard abbreviations and descriptions, units and data types are presented on the AGS website and shall not be redefined.

Other abbreviations may be defined as required within a project but should not match/impersonate existing standard abbreviations i.e. “CP” for Cable percussion in LOCA_TYPE should not be given a non-standard abbreviation defined as “CH” for Cable hole, LOCA_TYPE of “SCP” (Static cone penetrometer) shall not be replaced by a non-standard abbreviation of “CPT” (Cone penetration test) for example.

The UNIT list is case sensitive.

Users should check the list of ABBR/UNIT/TYPE abbreviations (proposed, approved or declined) before defining a new abbreviation. If the required item is not listed on the website, please submit your suggestion using the forms provided on the web site. All suggestions will be considered by the AGS Data Management Working Group.

6.3 AGS 4.1 Change log

The AGS 4.1 Change Log is now located on the AGS Format website (www.agsdataformat.com).

6.4 Suggested Format for a Transmittal Record

AGS Format Data Transmittal Record

Project Identification	
Client	
From	

Issue Sequence Number	AGS Edition Reference	Issued To & Date of Issue		General Notes
File Name	Creation Date	Creation Time	File Size	General Description of data transferred

6.5 AGS Format Historical Development Notes

Since AGS1 formal rules have been applied to the naming of Groups and Headers within the dictionary. Despite being applied consistently they have not previously been documented. They are now presented below to provide a consistent background for future developments.

They include, in no particular order:-

- The data items are those that are usually required to be reported by the specifications and standards
- Data fields which can be derived from existing data fields already in a group are not normally included. There may be some exceptions to this where the data field is required to be reported by the associated standard; the notable example being plasticity index (LLPL_PI).
- The units are reported in 'Engineering Units' rather than direct readings, for example "milli volts". It is up to the organization obtaining the data to measure, convert, calibrate and quality assure each measurement. Including the original readings with their conversion and calibration factors, as may be requested, would change the whole industry and is not something the AGS wishes to facilitate.

  Units and Data Types

  Suggested units of measurement and data types for each of the HEADINGs are given in the Data Dictionary (3.4). These represent the typical units of measurement that are used in the UK. They will either be the appropriate SI units or the unit defined by the particular Eurocode or British Standard relating to the measurement data under that specific HEADING.

  It is recognised that situations will occur where neither the SI unit nor the suggested unit of measurement are appropriate. In these cases, the unit of measurement and/or data TYPE for the results presented may be changed from the one shown in this document and the results presented according to the revised data UNIT / data TYPE.
- The metadata required for each observation fall into three parts:
  - those required to make the data field unique so that it can be stored and re-accessed;
  - those required to make the data work or make sense or place the data in an appropriate context;
  - those required by the project specification.

The first two are reflected by the concept of KEY and REQUIRED Headings.

- The data dictionary uses the concept of "flat files" rather than "relational files". The Groups have a "parent/child" relationship
- For multiple results (such as Down hole test readings) paired tables are used
- There is a concept of using a General Group to provide the overview and a Detail Group ('child') to contain the detailed results from an observation
- Where changes to the KEY Headings in a GROUP are required, new GROUPs are created with different names and the original Group deprecated
- The AGS Format is not a database specification BUT may be used to inform database design