Appendix 10-2: Report on Ground Investigation for Proposed Refurbishment Works at Aer Lingus Offices

32101

FOREWORD

Notes on Site Investigation Procedure

The following notes should be read in conjunction with the report. Any modifications to the procedures outlined below are indicated in the main text.

GENERAL

The recommendations made and opinions expressed in the Report are based on the "Boring Records, an examination of samples and results of the site and laboratory tests. No responsibility can be held for conditions which have not been revealed by the boreholes, for example, between borehole positions. Whilst the report may express an opinion on a possible configuration of strata both between borehole positions and below the maximum depth of the investigation, this is for guidance only and no liability can be accepted for its accuracy.

BORING TECHNIQUE

Unless otherwise stated the 'Shell and Auger' technique of soft ground boring has been employed. Whilst this technique allows the maximum data to be obtained on strata conditions, a degree of mixing of some layered soils, (e.g. thin layers of coarse and fine granular material) is inevitable. Specific attention is drawn to this factor where evidence of such a condition is available.

GROUND WATER

The ground water conditions entered on the Boring Records are those appertaining at the time of the investigation. The normal rate of boring does not usually permit the recording of an equilibrium water level for any one water strike. Moreover, ground water levels are subject to variations caused by seasonal effects or changes in local drainage conditions. The table of each Boring Record shows the ground water level at the quoted borehole and casing depths, usually at the start of the day's work. The word "none" indicates that ground water was sealed off by the borehole casing.

GAS MONITORING

Unless otherwise stated gas monitoring is carried out using a GA2000 infra red gas detector. The gases monitored for and levels noted are recorded and plotted on the relevant test data sheets. Unless stated otherwise no monitoring is carried out for gas pressure or to calculate gas flow rates.

ROUTINE SAMPLING

Undisturbed samples of predominantly cohesive soils are obtained in a 102mm diameter open-drive sampler, complying with the requirements of the British Standard Code of Practice B.S. 5930. Large disturbed samples of granular soils, or of soils in which undisturbed sampling is not possible or appropriate, are taken from the boring tools and sealed into polythene bags. Small disturbed samples are taken at frequent intervals and sealed into 0.5 kg glass jars or polythene bags for subsequent visual classification. Where encountered in sufficient quantity, samples of groundwater are taken.

Unless otherwise stated in the main text, disturbed soil samples may not be at their natural water content.

REPORT ON A GROUND INVESTIGATION FOR PROPOSED REFURBISHMENT WORKS AT AER LINGUS OFFICES, DUBLIN AIRPORT ON BEHALF OF ARUP CONSULTING ENGINEERS

REPORT NO. 10136 **DECEMBER 2004**

1.INTRODUCTION

The proposed development site is located within the existing car park areas at the Aer Lingus offices in Dublin Airport.

It is proposed to redevelop this site and construct a new multi storey office development on the existing site.

An investigation of sub-soil conditions was ordered by the projects consulting engineers, Arup Ireland, on behalf of their clients, Aer Lingus. The programme of ground investigation completed included,

- ✓ The construction of five exploratory boreholes to establish stratification. During the course of boring in-situ tests were performed at regular intervals and representative soil samples were recovered for visual examination and laboratory analysis.
- ✓ The drilling of five rotary coreholes to establish the depth to, type of and quality of the underlying bedrock.
- ✓ The excavation of fourteen trial pits using a CAT 225 tracked excavator. All of the trial pits were logged jointly by an IGSL and Arup geotechnical engineer.
- ✓ The installation of groundwater monitoring standpipes at selected borehole and corehole locations and the monitoring of water levels within the standpipes.
- ✓ The carrying out of laboratory soils testing (Geotechnical and Environmental) as specified by the projects engineers.

This report contains the factual information pertaining to the works, any interpretation of these results will be carried out by the projects engineers Arup Ireland.

II.FIELDWORK

The site is referred to as the Aer Lingus Dublin Airport office development and the locations of all of the investigation points are shown on the detailed site plan enclosed in Appendix VI to this report.

Site works were supervised by a representative of the consulting engineers and by an IGSL geotechnical engineer. The methods utilised during the course of the field investigations are outlined in the following sections.

Following consultation with the projects engineers a specialist Ground Probing Radar company (Lenmar)was employed by IGSL to carry out a full service location scan across the site.

Cable Tool Boreholes.

Conventional cable tool techniques (shell and auger) were employed at five locations across the site. All field work was carried out in accordance with BS5930.

Sampling and in - situ testing were performed to BS1377. Disturbed and undisturbed soil samples were taken at regular intervals or at changes in stratification while standard penetration tests (SPT's) were also carried out to establish relative in - situ soil strength.

Full details of stratification, testing, sampling, comments on groundwater and notes on any obstructions to normal boring encountered are given in the detailed borehole records enclosed in Appendix I to this report.

Groundwater monitoring standpipes were installed at specified cable tool boreholes in accordance with the specifications of the projects engineers. Installations comprised a 50mm standpipe slotted in its lower section with a filter sock and gravel pack installed around the slotted section. The installation was completed with a 50mm riser pipe attached to the slotted section around which an impermeable bentonite seal was placed to prevent surface water migration into the standpipe. Each installation was then capped with a protective steel lockable cover which was then concreted into place.

Groundwater monitoring was then carried out over a period of two site visits and the results of this monitoring is shown on table 1.1 detailed on the following page.

Table 1.1 – Groundwater Monitoring (depth below GL)

Location	22nd November 2004	7th December 2004
Bh1	3.30m	
RC1	3.50m	
Bh 2	1.10m	
RC2	2.15m	
Bh 3	1.05m	
RC3	1.25m	
Bh 4	4.80m	
RC4	4.85m	
Bh 5	5.20m	
RC5	3.25m	

Rotary Coring

A total of five rotary coreholes were constructed across the site. The results of these are enclosed in the detailed coring records enclosed in Appendix II to this report.

Rotary core drilling was undertaken using a top drive lorry mounted Casagrande rotary coring rig

The coring operation utilised H coring techniques which open a 100mm hole and recover a 75mm core of rock. Air mist flush was used in the drillhole and the cores were packed in 3m core boxes and returned to I.G.S.L.'s laboratory in Newbridge, County Kildare.

The rock cores were then logged by I.G.S.L.'s engineering geologist and detailed core logs are presented in the relevant appendix. These logs include descriptions and the standard mechanical indices (TCR, SCR and RQD). In addition, a graphic fracture spacing log has been prepared, and this is incorporated as part of the engineering geological core records.

Groundwater monitoring standpipes were installed at selected rotary coreholes locations. As with the cable tool boreholes all standpipes were installed in accordance with the specifications of the projects engineers.

Trial Pits

Fourteen trial pits were excavated across the site at locations shown on the attached site plan. Disturbed soil samples were taken at regular intervals or at changes in stratification.

All trial pit excavations were logged by an IGSL geotechnical engineer and full details of stratification, testing, sampling, pit stability and comments on groundwater are given in the detailed trial pit records enclosed in Appendix III to this report

Upon completion of the excavation works the holes were backfilled with spoil compacted into the pit with the excavator. The pits were then left for a period of time to allow settlement and consoilidation to occur after which IGSL revisited the site and, after discussion with the client and Arup, the top 500mm was removed from each pit and replaced with lean mix concrete. The pit surfaces were then trimmed and resurfaced with delay set macadam.

III. TESTING

During the course of the investigation samples of the sub soils were taken from the boreholes / trial pits and samples of the rock cores were recovered from the coreholes. The disturbed soil samples were returned to IGSL's laboratory where a programme of testing was scheduled by the projects engineers.

In Situ Tests – SPT Tests

The relative in-situ strength of the sub-soils was established at intervals in both the boreholes and coreholes by cone penetration test.

A solid conical point is hammered into the soil and the blow count for 300mm of penetration is recorded in four 75mm increments. Results are presented in the right - hand column of the boring records and in the central section of the relevant coring records.

Geotechnical Testing – Soils

All of the geotechnical test data is included in Appendix IV to this report.

Tests carried out included

- ✓ Moisture Content Tests
- ✓ Atterburg Limits (Classification tests).
- ✓ Moisture Condition Value (MCV) Tests
- ✓ Particle Size Distribution Tests (Wet Sieve)
- ✓ Sedimentation Analysis (by Hydrometer).
- ✓ pH and Sulphate Tests
- ✓ CBR Tests

Environmental Testing – Soils

At the request of the projects engineers, Arup Ireland, selected samples were dispatched to an environmental analytical laboratory for specialist testing.

The carrying out of the environmental laboratory soils testing was completed at the Alcontrol Geochem testing facilities in Dublin in accordance with the test schedules and specifications issued by Arup.

All of the environmental test data is included in Appendix V to this report.

Appendix I – Cable Tool Borehole Records

137228

REPORT NO: 10136 | **GEOTECHNICAL BORING RECORD** | **IGSL Ltd.**

CONTRACT : Aer Lingus SI

BOREHOLE NO: BH1
Sheet 1 of 1

CLIENT : Aer Lingus
ENGINEER : ARUP

GROUND LEVEL (mOD) 65.51
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 6.70
CASING DEPTH (m) 6.70

DATE STARTED: 14/10/2004
DATE COMPLETED: 15/10/2004

CO-ORDINATES : E 317208.36
N 243466.63

BORED BY: J.McDonnall

DEPTH (M)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES: REF. NUMBER	SAMPLES: SAMPLE TYPE	SAMPLES: DEPTH (m)	FIELD TEST RESULTS	STAND PIPE DETAILS
0	MADE GROUND consisting of tarmacadam and hardcore								
	Firm brown sandy CLAY with rootlets		65.11	0.40					
1	Stiff brown sandy gravelly CLAY with cobbles and boulders		64.51	1.00	9782	B	1.10	N=17	
2	Stiff black sandy gravelly CLAY with cobbles and boulders		63.51	2.00	9783	B	2.10	N=27	
3					9784	B	3.00	N=24	
4					9785	B	4.00	N=22	
5					9786	B	5.00	N=24	
6					9787	B	6.00	N=29	
7	Obstruction - Possible rock/boulder		58.91	6.60				N=R	
	End of Borehole at 6.70 m		58.81	6.70					
8									
9									
10									

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments
4.30	4.60	0.75	
6.60	6.70	2.00	

Water Strike Details

Water Strike	Casing Depth	Sealed At	Rise To	Time	Comments
5.00	5.00	-	-	-	Seepage

Standpipe Installation Details

Date	Tip Depth	RZ Top	RZ Base	Type
15/10/2004	6.70	4.50	6.50	SP

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments
15/10/2004	6.70	0.00	6.40	End of boring

Remarks: Waiting for jeep to move barriers and rig. Hand dig pit to 1.2m. 3 hours erecting barriers around rig.

137229

REPORT NO: 10136 | **GEOTECHNICAL BORING RECORD** | **IGSL Ltd.**

CONTRACT : Aer Lingus SI

BOREHOLE NO: BH2
Sheet 1 of 1

CLIENT : Aer Lingus
ENGINEER : ARUP

GROUND LEVEL (mOD) 63.88
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 7.00
CASING DEPTH (m) 7.00

DATE STARTED: 12/10/2004
DATE COMPLETED: 12/10/2004

CO-ORDINATES : E 317354.94
N 243446.69

BORED BY: J.McDonnall

DEPTH (M)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES: REF. NUMBER	SAMPLES: SAMPLE TYPE	SAMPLES: DEPTH (m)	FIELD TEST RESULTS	STAND PIPE DETAILS
0	TOPSOIL								
	Brown sandy gravelly CLAY with cobbles and boulders		63.48	0.40					
1					9776	B	1.00	N=21	
2					9777	B	2.00	N=27	
	Black sandy gravelly CLAY with cobbles and boulders		61.38	2.50					
3					9778	B	3.00	N=29	
4					9779	B	4.00	N=30	
5					9780	B	5.00	N=35	
					9781	B	6.00	N=39/ 150mm	
7	Obstruction - Possible rock/boulder		57.08	6.80					
	End of Borehole at 7.00 m		56.88	7.00				N=R	
8									
9									
10									

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments
2.50	2.70	0.75	
6.30	6.40	0.50	
6.80	7.00	2.00	

Water Strike Details

Water Strike	Casing Depth	Sealed At	Rise To	Time	Comments
-	-	-	-	-	Dry

Standpipe Installation Details

Date	Tip Depth	RZ Top	RZ Base	Type
12/10/2004	7.00	4.00	7.00	SP

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments
12/10/2004	7.00	0.00	-	Dry at end of boring

Remarks: Hand dig pit to 1.2m. 3 hours erecting barriers around rig.

137230

REPORT NO: 10136 | **GEOTECHNICAL BORING RECORD** | **IGSL Ltd.**

CONTRACT : Aer Lingus SI

BOREHOLE NO: BH3
Sheet 1 of 1

CLIENT : Aer Lingus
ENGINEER : ARUP

GROUND LEVEL (mOD) 61.93
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 7.60
CASING DEPTH (m) 7.60

DATE STARTED: 22/10/2004
DATE COMPLETED: 22/10/2004

CO-ORDINATES : E 317321.61
N 243213.27

BORED BY: J.McDonnall

DEPTH (M)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES: REF. NUMBER	SAMPLES: SAMPLE TYPE	SAMPLES: DEPTH (m)	FIELD TEST RESULTS	STAND PIPE DETAILS
0	MADE GROUND consisting of brown sandy gravelly CLAY with cobbles and red brick								
1					9713	B	1.00	N=11	
2					9714	B	2.00	N=9	
	Stiff brown sandy gravelly CLAY with cobbles and boulders		59.13	2.80					
3					9715	B	3.00	N=32	
4	Stiff to very stiff black sandy gravelly CLAY with cobbles and boulders		57.93	4.00	9716	B	4.10	N=43	
5					9717	B	5.00	N=43	
6					9718	B	6.00	N=47	
7					9719	B	7.00	N=42	
	End of Borehole at 7.60 m		54.43	7.50					
8									
9									
10									

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments
5.60	5.70	0.50	
6.50	6.70	0.50	
7.50	7.60	2.00	

Water Strike Details

Water Strike	Casing Depth	Sealed At	Rise To	Time	Comments
-	-	-	-	-	Dry

Standpipe Installation Details

Date	Tip Depth	RZ Top	RZ Base	Type
22/10/2004	7.60	3.50	7.50	SP

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22/10/2004	7.60	0.00	-	Dry at end of boring

Remarks: Hand dig pit to 1.2m. Erect and dismantle barriers - 3hrs

137231

REPORT NO: 10136 — GEOTECHNICAL BORING RECORD — IGSL Ltd.

CONTRACT : Aer Lingus SI

BOREHOLE NO: BH4
Sheet 1 of 1

CLIENT : Aer Lingus
ENGINEER : ARUP

GROUND LEVEL (mOD) 64.01
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 8.50
CASING DEPTH (m) 8.50

DATE STARTED: 19/10/2004
DATE COMPLETED: 20/10/2004

CO-ORDINATES : E 317130.90
N 243287.30

BORED BY: J.McDonnall

DEPTH (M)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES REF. NUMBER	SAMPLES SAMPLE TYPE	SAMPLES DEPTH (m)	FIELD TEST RESULTS	STAND PIPE DETAILS
0	MADE GROUND consisting of tarmacadam and hardcore		63.81	0.20					
	MADE GROUND consisting of stiff brown sandy clay with red brick pottery and roots				9796	B	1.00	N=21	
2	Brown sandy gravelly CLAY with cobbles and boulders		62.01	2.00	9797	B	2.10	N=23	
	Very stiff black sandy gravelly CLAY with cobbles and boulders		61.51	2.50					
3					9798	B	3.00	N=46	
4					9799	B	4.00	N=50	
5					9800	B	5.00	N=50	
6					9710	B	6.00	N=41	
7					9711	B	7.00	N=40	
8					9712	B	8.00	N=36/ 150mm	
	Obstruction - Possible rock/boulder		55.61	8.40					
	End of Borehole at 8.50 m		55.51	8.50					
9									
10									

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments
4.50	4.80	1.00	
8.40	8.50	2.00	

Water Strike Details

Water Strike	Casing Depth	Sealed At	Rise To	Time	Comments
-	-	-	-	-	Dry

Standpipe Installation Details

Date	Tip Depth	RZ Top	RZ Base	Type
20/10/2004	8.50	5.50	8.50	SP

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments
20/10/2004	8.50	0.00	-	Dry at end of boring

Remarks: Hand dig pit to 1.2m. 3 hours erecting barriers around rig.

137232

REPORT NO: 10136 — GEOTECHNICAL BORING RECORD — IGSL Ltd.

CONTRACT : Aer Lingus SI

BOREHOLE NO: BH5
Sheet 1 of 1

CLIENT : Aer Lingus
ENGINEER : ARUP

GROUND LEVEL (mOD) 64.16
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 8.20
CASING DEPTH (m) 8.20

DATE STARTED: 15/10/2004
DATE COMPLETED: 18/10/2004

CO-ORDINATES : E 317235.25
N 243386.55

BORED BY: J.McDonnall

DEPTH (M)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES REF. NUMBER	SAMPLES SAMPLE TYPE	SAMPLES DEPTH (m)	FIELD TEST RESULTS	STAND PIPE DETAILS
0	MADE GROUND consisting of tarmacadam and hardcore		63.96	0.20					
	Stiff brown sandy gravelly CLAY with cobbles and boulders				9788	B	1.00	N=28	
2	Black sandy gravelly CLAY with cobbles and boulders		62.66	1.50	9789	B	2.00	N=34	
3					9790	B	3.00	N=44	
4					9791	B	4.00	N=49	
5					9792	B	5.00	N=46	
6					9793	B	6.00	N=45	
7					9794	B	7.00	N=34	
8	Obstruction - Possible rock/boulder		56.16	8.00				N=R	
	End of Borehole at 8.20 m		55.96	8.20	9795	B	8.20		
9									
10									

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments
3.50	3.70	1.00	
5.35	5.60	1.25	
8.00	8.20	2.00	

Water Strike Details

Water Strike	Casing Depth	Sealed At	Rise To	Time	Comments
8.00	8.00	-	-	-	Seepage

Standpipe Installation Details

Date	Tip Depth	RZ Top	RZ Base	Type
18/10/2004	8.20	5.00	8.00	SP

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments
18/10/2004	8.20	0.00	-	Dry at end of boring

Remarks: Hand dig pit to 1.2m. 3 hours erecting barriers around rig. 3 hours standing waiting for cars to move.

Appendix II – Rotary Core Records

137233

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.

CONTRACT: Aerlingus			DRILLHOLE NO : RC1 SHEET: Sheet 1 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 65.51	DATE STARTED: 26/11/2004 DATE COMPLETED: 26/11/2004
CO-ORDINATES: 317208.36 243466.63		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm) 0 250 500	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
													SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravelly clay
		0	0	0									
8.50									57.01	8.50			Firm to stiff, brown/dark brown, sandy Continued next sheet

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 9.00
Depth to Response Zone bottom (m) : 16.10
Comments : Gravel 9.0m-16.1m, Seal 0.0m-9.0m

137233

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC1 SHEET: Sheet 2 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 65.51	DATE STARTED: 26/11/2004 DATE COMPLETED:26/11/2004
CO-ORDINATES: 317208.36 243466.63		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
9		92	0	0									gravelly clay with occasional cobbles
	9.70								55.41	10.10			
10		100	75	72									Moderately strong to strong, thick to locally medium/thin bedded, grey/blue, fine grained LIMESTONE (locally fossiliferous) fresh to locally moderately weathered (at 11.4m-12.05m) intersected by smooth, planar to irregular, tight to open, locally iron oxide stained, commonly calcite filled fractures of sub 45° to locally sub-vertical dip.
11	11.30												
12		100	67	55									
13	12.90												
		100	88	70									
14	14.50												
15		100	91	35									
16	16.10								49.41	16.10			End of Borehole at 16.10 m

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 9.00
Depth to Response Zone bottom (m) : 16.10
Comments : Gravel 9.0m-16.1m, Seal 0.0m-9.0m

137234

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC2 SHEET: Sheet 1 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 63.88	DATE STARTED: 26/11/2004 DATE COMPLETED:26/11/2004
CO-ORDINATES: 317354.94 243446.69		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
1		0	0	0									SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravelly clay
2													
3													
4									59.68	4.20			SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravels clay with cobbles
5													
6									57.48	6.40			SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of Rock
	6.80								57.08	6.80			
7		100	49	0									Moderately strong to strong, thin to medium bedded, grey/blue, fine grained LIMESTONE (locally fossiliferous, possibly slightly dolomitised) fresh to locally slighly weathered. Intersected by rough to locally smooth, undulose to irregular, tight to open,locally calcite filled, locally slight iron oxide stained with fractures of 45° to sub-horizontal to locally irregular dip.
8	8.40												

Continued next sheet

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 6.50
Depth to Response Zone bottom (m) : 12.50
Comments : Gravel 6.5m- 12.5m, Seal 0.0m- 6.5m

137234

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC2 SHEET: Sheet 2 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 63.88	DATE STARTED: 26/11/2004 DATE COMPLETED: 26/11/2004
CO-ORDINATES: 317354.94 243446.69		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
9													Moderately strong to strong, thin to medium bedded, grey/blue, fine grained LIMESTONE (locally fossiliferous, possibly slightly dolomitised) fresh to locally slightly weathered. Intersected by rough to locally smooth, undulose to irregular, tight to open,locally calcite filled, locally slight iron oxide stained with fractures of 45° to sub-horizontal to locally irregular dip.
10	10.00	100	56	23									
11	11.00	100	85	74									
12	12.50	100	93	83					51.38	12.50			End of Borehole at 12.50 m
13													
14													
15													
16													

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 6.50
Depth to Response Zone bottom (m) : 12.50
Comments : Gravel 6.5m- 12.5m, Seal 0.0m- 6.5m

137235

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC3 SHEET: Sheet 1 of 3
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 61.93	DATE STARTED: 26/11/2004 DATE COMPLETED: 26/11/2004
CO-ORDINATES: 317321.61 243213.27		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
1													SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravelly clay
2													
3													
4													
5													
6													
7													
8											0 0 0		

Continued next sheet

REMARKS: 1.5hr digging inspection pit. 1hr Clean up. 2hr wait as car parked over next location

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 12.00
Depth to Response Zone bottom (m) : 22.20
Comments : Gravel 12.0m- 22.2m, Seal 0.0m- 12.0m

137235

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus		DRILLHOLE NO : RC3 SHEET: Sheet 2 of 3	
CLIENT: Arup ENGINEER: Aerlingus	CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 61.93	DATE STARTED: 26/11/2004 DATE COMPLETED: 26/11/2004	
CO-ORDINATES: 317321.61 243213.27	INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:	

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
9													SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravelly clay
10													
11													
12													
13									48.73	13.20			SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravels clay with cobbles
14													
15									46.53	15.40			SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of Rock
16	15.80	100	81	28					46.13	15.80			Strong, medium to thinly bedded, dark grey, fine grained LIMESTONE (argillaceous) fresh to locally slightly weathered. Intersected by smooth, planar to locally undulose, tight to open, commonly iron oxide stained with fractures sub-horizontal to locally subvertical dip.
	17.40												Continued next sheet

REMARKS: 1.5hr digging inspection pit. 1hr Clean up. 2hr wait as car parked over next location

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 12.00
Depth to Response Zone bottom (m) : 22.20
Comments : Gravel 12.0m- 22.2m, Seal 0.0m- 12.0m

137235

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus		DRILLHOLE NO : RC3 SHEET: Sheet 3 of 3	
CLIENT: Arup ENGINEER: Aerlingus	CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 61.93	DATE STARTED: 26/11/2004 DATE COMPLETED: 26/11/2004	
CO-ORDINATES: 317321.61 243213.27	INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:	

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
18													
19	19.00	100	76	13									Strong, medium to thinly bedded, dark grey, fine grained LIMESTONE (argillaceous) fresh to locally slightly weathered. Intersected by smooth, planar to locally undulose, tight to open, commonly iron oxide stained with fractures sub-horizontal to locally subvertical dip.
20													
	20.60	100	85	23									
21													
22	22.20	100	86	61					39.73	22.20			End of Borehole at 22.20 m
23													
24													
25													

REMARKS: 1.5hr digging inspection pit. 1hr Clean up. 2hr wait as car parked over next location

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 12.00
Depth to Response Zone bottom (m) : 22.20
Comments : Gravel 12.0m- 22.2m, Seal 0.0m- 12.0m

137236

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC4 SHEET: Sheet 1 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 64.01	DATE STARTED: 30/11/2004 DATE COMPLETED: 30/11/2004
CO-ORDINATES: 317130.90 243287.30		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
0-8		0	0	0	0-250-500								SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravelly clay

Continued next sheet

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 11.00
Depth to Response Zone bottom (m) : 15.80
Comments : Gravel 8.2m- 14.2m, Seal 0.0m- 8.2m

137236

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC4 SHEET: Sheet 2 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 64.01	DATE STARTED: 30/11/2004 DATE COMPLETED: 30/11/2004
CO-ORDINATES: 317130.90 243287.30		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
0-16	11.30				0-250-500				53.11	10.90			SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravelly clay
	12.90	100	94	46					52.71	11.30			SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of Rock
	14.30	100	86	9									Strong, medium to thickly bedded, grey, fine grained LIMESTONE (argillaceous) freshly to locally slightly weathered. Intersected by smooth, planar to locally undulose, tight to open, commonly iron oxide stained with fractures of sub-horizontalto locally subvertical dip.
	15.90	100	95	26					48.21	15.80			End of Borehole at 15.80 m

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 11.00
Depth to Response Zone bottom (m) : 15.80
Comments : Gravel 8.2m- 14.2m, Seal 0.0m- 8.2m

137237

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC5 SHEET: Sheet 1 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 64.16	DATE STARTED: 26/11/2004 DATE COMPLETED:26/11/2004
CO-ORDINATES: 317235.25 243386.55		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
0													SYMETREX: OPEN HOLE DRILLING - Observed by driller as returns of gravelly clay
8.30		0	0	0					55.86	8.30			Strong, thick to medium bedded, dark grey, fine grained LIMESTONE
													Continued next sheet

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 8.20
Depth to Response Zone bottom (m) : 14.20
Comments : Gravel 11.0m- 15.8m, Seal 0.0m- 11.0m

137237

REPORT NO.	10136	GEOTECHNICAL CORE LOG RECORD	IGSL Ltd.
CONTRACT: Aerlingus			DRILLHOLE NO : RC5 SHEET: Sheet 2 of 2
CLIENT: Arup ENGINEER: Aerlingus		CORE DIAMETER (mm): 74 GROUND LEVEL (mOD): 64.16	DATE STARTED: 26/11/2004 DATE COMPLETED:26/11/2004
CO-ORDINATES: 317235.25 243386.55		INCLINATION (Degrees): 90 FLUSH: AIR/MIST	DRILLED BY: MILLENNIUM LOGGED BY:

DOWNHOLE DEPTH (m)	CORE RUN DEPTH (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	UCS (MPa)	POINT LOAD Is(50) MPa	SYMBOLIC LOG	ELEVATION (mOD)	DEPTH (m)	SPT (N value)	STANDPIPE DETAILS	GEOTECHNICAL DESCRIPTION
9.90		88	64	22									(argillaceous) fresh to locally slightly weathered. Intersected by smooth, planar to locally undulose, tight to open, very locally calcite filled, locally iron oxide stained with fractures of sub 45° to locally sub-horizontal dip.
10.20		90	50	0									
11.60		93	74	44									
12.80		100	77	35									
14.20		100	93	57					49.96	14.20			End of Borehole at 14.20 m

REMARKS: 2.5hr standing

INSTALLATION DETAILS
Installation Type : SP
Depth to Response Zone top (m) : 8.20
Depth to Response Zone bottom (m) : 14.20
Comments : Gravel 11.0m- 15.8m, Seal 0.0m- 11.0m

Appendix III – Trial Pits

137238

REPORT NO. 10136	TRIAL PIT RECORD	IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP1
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	21/10/2004
		Date Completed:	21/10/2004
CO-ORDINATES:	E 317201.86 N 243453.11	Ground Level (mOD):	65.44

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.05	65.39						
	MADE GROUND consisting of hardcore									
	Firm to stiff brown sandy gravelly CLAY with occasional cobbles and lenses of gravelly sand		0.45	64.99						
1.0					▽	N6655 N6656 N6657 N6658 N6659	B D	1.00		
2.0						N6660 N6661	B D	2.00		
	Very stiff to hard black sandy gravelly CLAY with occasional cobbles and lenses of sand		2.30	63.14						
3.0						N6662 N6663	B D	3.00		
	End of Trial Pit at 3.20 m		3.20	62.24						
4.0										

Groundwater Conditions: Slow groundwater ingress encountered at 1.7m

Stability: Stable during excavation

Remarks: Samples N6657-N6659 are environmental samples. Pit terminated due to difficult excavation

137239

REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP2
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	21/10/2004
		Date Completed:	21/10/2004
CO-ORDINATES:	E 317247.45 N 243444.10	Ground Level (mOD):	65.00

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.05	64.95						
	MADE GROUND consisting of hardcore		0.50	64.50	▽					
	Firm to stiff brown sandy gravelly CLAY with occasional cobbles and boulders. Becoming more gravelly at 1.6m					N6645 N6646 N6647 N6648 N6649	B D	1.00		
1.0										
2.0	Very stiff to hard black sandy gravelly CLAY with occasional cobbles and boulders		1.90	63.10		N6650 N6651	B D	1.90		
3.0						N6653 N6654	B D	3.00		
	End of Trial Pit at 3.70 m		3.70	61.30						
4.0										

Groundwater Conditions: Groundwater seepage encountered at 0.5m

Stability: Stable during excavation

Remarks: Samples N6647-N6649 are environmental samples. Pit terminated due to difficult excavation

137240

REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP3
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	21/10/2004
		Date Completed:	21/10/2004
CO-ORDINATES:	E 317315.06 N 243433.84	Ground Level (mOD):	64.50

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil									
	MADE GROUND consisting of grey brown clayey sandy gravel with occasional cobbles, red brick and plastic		0.40	64.10	▽					
	Firm grey brown sandy gravelly CLAY with occasional cobbles and boulders. Becoming stiff to very stiff at 2.0m		0.80	63.70		N6622 N6623 N6624 N6625 N6626	B D	1.00		
1.0										
2.0	Very stiff to hard black sandy gravelly CLAY with occasional cobbles and boulders		2.10	62.40		N6628 N6627	B D	2.00		
3.0						N6630 N6629	B D	3.00		
	Obstruction - Possible boulder/rock		3.55	60.95						
	End of Trial Pit at 3.60 m		3.60	60.90						
4.0										

Groundwater Conditions: Groundwater seepage encountered at 0.5m

Stability: Stable during excavation

Remarks: Samples N6624 - N6626 are environmental samples

137241

REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP4
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	26/10/2004
		Date Completed:	26/10/2004
CO-ORDINATES:	E 317192.98 N 243412.85	Ground Level (mOD):	64.99

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.05	64.94						
	MADE GROUND consisting of hardcore		0.30	64.69						
	Stiff to very stiff brown sandy gravelly CLAY with occasional cobbles and boulders					N6664 N6665 N6666 N6667 N6668	B D	1.00		
1.0			1.10	63.89						
	Very stiff to hard dark grey/black sandy gravelly CLAY with some cobbles and occasional boulders					N6669 N6670	B D	2.00		
2.0										
	Obstruction - Possible boulder/rock		2.85	62.14		N6671 N6672	B D	2.90		
3.0	End of Trial Pit at 2.90 m		2.90	62.09						
4.0										

Groundwater Conditions: No groundwater encountered

Stability: Stable during excavation

Remarks: Samples N6666-N6668 are environmental samples. Difficult excavation

137242

REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP5
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	27/10/2004
		Date Completed:	27/10/2004
CO-ORDINATES:	E 317240.41 N 243411.59	Ground Level (mOD):	64.50

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.05	64.45						
	MADE GROUND consisting of hardcore		0.30	64.20						
	Very stiff brown sandy very gravelly CLAY with occasional cobbles					N6673 N6674 N6675 N6676 N6677	B D	1.00		
1.0			1.30	63.20						
	Very stiff to hard black sandy gravelly CLAY with some cobbles and occasional boulders					N6678 N6679	B D	2.00		
2.0										
	Obstruction - Possible boulder/rock		2.35	62.15						
3.0	End of Trial Pit at 2.40 m		2.40	62.10						
4.0										

Groundwater Conditions: No groundwater encountered

Stability: Stable during excavation

Remarks: Samples N6675-77 are environmental samples.

137243

REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP6
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	11/10/2004
		Date Completed:	11/10/2004
CO-ORDINATES:	E 317342.00 N 243384.20	Ground Level (mOD):	63.48

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil with plastic, glass and pottery fragments									
	Firm to stiff brown sandy gravelly CLAY		0.30	63.18						
	Firm to stiff grey brown sandy gravelly CLAY with occasional cobbles. Becoming very stiff at 2.0m		0.70	62.78		N4301 N4302	B D	0.70		
1.0						N4303 N4304 N4309 N4310	B D	1.00		
2.0						N4305 N4306	B D	2.00		
	Very stiff black sandy gravelly CLAY with occasional cobbles and boulders. Becoming hard at 3.2m		2.20	61.28						
3.0						N4307 N4308	B D	2.50		
	End of Trial Pit at 3.40 m		3.40	60.08	▽	N4311 N4312	B D	3.40		
4.0										

Groundwater Conditions: Slight seepage encountered at 3.4m

Stability: Stable during excavation

Remarks: Samples N4309 and N4310 are environmental samples

137244

REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP7
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	21/10/2004
		Date Completed:	21/10/2004
CO-ORDINATES:	E 317158.35 N 243338.83	Ground Level (mOD):	63.85

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil									
	MADE GROUND consisting of firm/stiff brown sandy gravelly clay with occasional cobbles and timber		0.50	63.35						
1.0	Medium dense grey brown clayey sandy GRAVEL with cobbles. Possible made ground		0.90	62.95		N6638 N6639 N6640 N6641 N6642	B D	1.00		
	Soft to firm brown very sandy very gravelly CLAY with occasional cobbles		1.50	62.35	▽					
2.0						N6643 N6644	B D	2.00		
	End of Trial Pit at 2.40 m		2.40	61.45						
3.0										
4.0										

Groundwater Conditions: Slow groundwater ingress encountered at 1.5m

Stability: Unstable during excavation from 0.9m

Remarks: Samples N6640-N6642 are environmental samples. Pit terminated due to collapse

137245

REPORT NO. 10136	TRIAL PIT RECORD	IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP8
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	27/10/2004
CO-ORDINATES:	E - N -	Date Completed:	27/10/2004
		Ground Level (mOD):	-

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.10							
	MADE GROUND consisting of hardcore and clay		0.50							
	Firm to stiff brown sandy gravelly CLAY with occasional cobbles. Becoming very stiff at 2m					N4327 N4328 N4329 N4330 N4331	B D	1.00		
1.0										
2.0						N4332 N4333	B D	2.00		
	Very stiff to hard black sandy gravelly CLAY with occasional cobbles		2.80							
3.0	End of Trial Pit at 3.00 m		3.00			N4334 N4335	B D	3.00		
4.0										

Groundwater Conditions:	No groundwater encountered
Stability:	Stable during excavation
Remarks:	Samples N4329-N4331 are environmental samples. No progress at 3m, pit terminated

137245

REPORT NO. 10136	TRIAL PIT RECORD	IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP9
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	11/10/2004
CO-ORDINATES:	E 317317.28 N 243311.87	Date Completed:	11/10/2004
		Ground Level (mOD):	62.79

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil overlying brown sandy gravelly clay with plastic, steel, timber, cobbles and boulders									
1.0	MADE GROUND consisting of grey sandy gravelly clay with straw		1.00	61.79		N4313 N4314	B D	1.00		
	MADE GROUND - 4 inch PVC pipe encountered at this depth		1.20	61.59		N4315 N4316				
	End of Trial Pit at 1.25 m		1.25	61.54		N4317				
2.0										
3.0										
4.0										

Groundwater Conditions:	No groundwater encountered
Stability:	Stable during excavation
Remarks:	Samples N4315 - N4317 are environmental samples. 4 inch PVC pipe encountered at 1.2m running approximately NNE. Pit terminated at this depth hole re-dug at TP9A (adjacent to TP9).

137246 ✓

REPORT NO. 10136	TRIAL PIT RECORD	IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP9A
		Sheet:	Sheet 1 of 2
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	11/10/2004
CO-ORDINATES:	E 317317.28 N 243311.87	Date Completed:	11/10/2004
		Ground Level (mOD):	62.79

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil overlying brown sandy gravelly clay with plastic, china, timber and cobbles				▽					
1.0	MADE GROUND consisting of grey sandy gravelly clay with straw		0.90	61.89		N4318 N4319	B D	1.00		
	Firm grey sandy gravelly CLAY		1.60	61.19						
2.0						N4320 N4321	B D	2.00		
	Firm to stiff grey and brown mottled sandy gravelly CLAY with occasional cobbles and boulders		2.40	60.39						
3.0						N4322 N4323	B D	3.00		
	Very stiff black sandy gravelly CLAY with occasional cobbles and boulders.		3.60	59.19						
4.0	Continued next sheet					N4324	B	4.00		

Groundwater Conditions: Slight seepage encountered at 0.9m

Stability: Stable during excavation

Remarks:

137247

REPORT NO. 10136	TRIAL PIT RECORD	IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP9A
		Sheet:	Sheet 2 of 2
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	11/10/2004
CO-ORDINATES:	E 317317.28 N 243311.87	Date Completed:	11/10/2004
		Ground Level (mOD):	62.79

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
4.0	Very stiff black sandy gravelly CLAY with occasional cobbles and boulders.					N4325	D			
	End of Trial Pit at 4.50 m		4.50	58.29						
5.0										
6.0										
7.0										
8.0										

Groundwater Conditions: Slight seepage encountered at 0.9m

Stability: Stable during excavation

Remarks:

137247

REPORT NO. 10136	TRIAL PIT RECORD	IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP10
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	27/10/2004
		Date Completed:	27/10/2004
CO-ORDINATES:	E 317143.10 N 243247.41	Ground Level (mOD):	63.97

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.10	63.87						
	MADE GROUND consisting of hardcore, clay and sand		0.35	63.62						
	Firm to stiff brown sandy gravelly CLAY with occasional cobbles					N6695 N6696 N6697 N6698 N6699	B D	1.00		
1.0										
	Firm to stiff grey and brown mottled sandy gravelly CLAY with occasional cobbles and boulders. Becoming very stiff at 2.6m		1.70	62.27		N6700 N4326	B D	2.00		
2.0										
	End of Trial Pit at 2.80 m		2.80	61.17						
3.0										
4.0										

Groundwater Conditions:	No groundwater encountered
Stability:	Stable during excavation
Remarks:	Samples N6697-N6699 are environmental samples. No progress made at 2.8m, pit terminated

137248

REPORT NO. 10136	TRIAL PIT RECORD	IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP11
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	27/10/2004
		Date Completed:	27/10/2004
CO-ORDINATES:	E 317224.11 N 243272.90	Ground Level (mOD):	62.70

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil, glass and red brick									
	Firm brown sandy gravelly CLAY with occasional cobbles. Possible made ground		0.30	62.40						
	End of Trial Pit at 0.50 m		0.50	62.20		N6680 N6681 N6682	D	0.50		
1.0										
2.0										
3.0										
4.0										

Groundwater Conditions:	No groundwater encountered
Stability:	Stable during excavation
Remarks:	Samples N6680-82 are environmental samples. Pit terminated due to signals detected by CAT

137248

REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP10
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	27/10/2004
		Date Completed:	27/10/2004
CO-ORDINATES:	E 317143.10 N 243247.41	Ground Level (mOD):	63.97

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.10	63.87						
	MADE GROUND consisting of hardcore, clay and sand		0.35	63.62						
	Firm to stiff brown sandy gravelly CLAY with occasional cobbles					N6695 N6696 N6697 N6698 N6699	B D	1.00		
1.0										
	Firm to stiff grey and brown mottled sandy gravelly CLAY with occasional cobbles and boulders. Becoming very stiff at 2.6m		1.70	62.27		N6700 N4326	B D	2.00		
2.0										
	End of Trial Pit at 2.80 m		2.80	61.17						
3.0										
4.0										

Groundwater Conditions: No groundwater encountered

Stability: Stable during excavation

Remarks: Samples N6697-N6699 are environmental samples. No progress made at 2.8m, pit terminated

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REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP11
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	27/10/2004
		Date Completed:	27/10/2004
CO-ORDINATES:	E 317224.11 N 243272.90	Ground Level (mOD):	62.70

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples Ref. No.	Samples Type	Samples Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil, glass and red brick		0.30	62.40						
	Firm brown sandy gravelly CLAY with occasional cobbles. Possible made ground		0.50	62.20		N6680 N6681 N6682	D	0.50		
	End of Trial Pit at 0.50 m									
1.0										
2.0										
3.0										
4.0										

Groundwater Conditions: No groundwater encountered

Stability: Stable during excavation

Remarks: Samples N6680-82 are environmental samples. Pit terminated due to signals detected by CAT

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REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP12
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	21/10/2004
CO-ORDINATES:	E 317319.34 N 243263.74	Date Completed:	21/10/2004
		Ground Level (mOD):	62.15

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples: Ref. No.	Samples: Type	Samples: Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of topsoil									
	MADE GROUND consisting of hardcore, sand, clay and red brick		0.20	61.95						
	MADE GROUND consisting of brown sandy gravelly clay with cobbles and red brick		0.45	61.70						
	Very stiff dark grey sandy gravelly CLAY with occasional cobbles. Possible made ground		0.70	61.45		N6631 N6632 N6633 N6634 N6635	B D	1.00		
1.0										
2.0	Firm brown sandy gravelly CLAY with occasional cobbles		2.00	60.15	▽	N6637 N6636 N6637	B D W	2.00 2.20		
	End of Trial Pit at 2.50 m		2.50	59.65						
3.0										
4.0										

Groundwater Conditions: Rapid groundwater ingress encountered at 2.2m

Stability: Unstable during excavation

Remarks: Samples N6633-N6635 are environmental samples. Pit terminated due to water ingress

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REPORT NO. 10136 — TRIAL PIT RECORD — IGSL Ltd.

CONTRACT:	Aer Lingus SI	Trial Pit No.:	TP14
		Sheet:	Sheet 1 of 1
CLIENT:	Aer Lingus	Excavation Method:	Wheeled excavator
ENGINEER:	ARUP	Date Started:	27/10/2004
CO-ORDINATES:	E 317195.74 N 243292.31	Date Completed:	27/10/2004
		Ground Level (mOD):	63.12

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water Strike (m)	Samples: Ref. No.	Samples: Type	Samples: Depth (m)	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND consisting of tarmacadam		0.10	63.02						
	MADE GROUND consisting of hardcore and sand									
	MADE GROUND consisting of stiff dark grey sandy very gravelly clay with occasional cobbles and timber		0.50	62.62						
1.0						N6683 N6684 N6685 N6686 N6687	B D	1.00		
	Firm/stiff grey/brown sandy gravelly CLAY with occasional cobbles		1.10	62.02						
2.0					▽	N6688 N6689 N6690 N6691 N6692	B D	2.00		
3.0	End of Trial Pit at 3.00 m		3.00	60.12		N6693 N6694	B D	3.00		
4.0										

Groundwater Conditions: Groundwater seepage encountered at 2.4m

Stability: Unstable during excavation

Remarks: Samples N6685-87 and N6690-N6692 are environmental samples

Appendix IV – Laboratory Test Results (Geotech)

Determination of Moisture Content

BS1377:Part 2:1990, clauses 3.2

BH/TP No.	Sample No.	Depth (m)	Sample Type	Moisture Content %	Description
TP 6	N4302	0.70	D	22.6	Brown slightly sandy slightly gravelly SILT/CLAY with root hairs
TP 6	N4304	1.00	D	15.5	Grey brown slightly sandy slightly gravelly SILT/CLAY
TP 6	N4306	2.00	D	10.1	Grey brown slightly sandy slightly gravelly SILT/CLAY
TP 6	N4308	2.50	D	9.9	Grey black slightly sandy slightly gravelly SILT/CLAY
TP 6	N4312	3.40	D	8.3	Grey black slightly sandy slightly gravelly SILT/CLAY
TP 9	N4314	1.00	D	20.8	Grey brown slightly sandy slightly gravelly SILT/CLAY with root hairs
TP 9A	N4319	1.00	D	30.9	Grey brown slightly sandy slightly gravelly SILT/CLAY with root hairs
TP 9A	N4321	2.00	D	17.8	Dark grey slightly sandy slightly gravelly SILT/CLAY
TP 9A	N4323	3.00	D	13.0	Brown slightly sandy slightly gravelly SILT/CLAY
TP 9A	N2325	4.00	D	11.0	Mottled grey brown slightly sandy slightly gravelly SILT/CLAY

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Appendix IV – Laboratory Test Results (Geotech)

Determination of Moisture Content

BS1377:Part 2:1990, clauses 3.2

BH/TP No.	Sample No.	Depth (m)	Sample Type	Moisture Content %	Description
TP 6	N4302	0.70	D	22.6	Brown slightly sandy slightly gravelly SILT/CLAY with root hairs
TP 6	N4304	1.00	D	15.5	Grey brown slightly sandy slightly gravelly SILT/CLAY
TP 6	N4306	2.00	D	10.1	Grey brown slightly sandy slightly gravelly SILT/CLAY
TP 6	N4308	2.50	D	9.9	Grey black slightly sandy slightly gravelly SILT/CLAY
TP 6	N4312	3.40	D	8.3	Grey black slightly sandy slightly gravelly SILT/CLAY
TP 9	N4314	1.00	D	20.8	Grey brown slightly sandy slightly gravelly SILT/CLAY with root hairs
TP 9A	N4319	1.00	D	30.9	Grey brown slightly sandy slightly gravelly SILT/CLAY with root hairs
TP 9A	N4321	2.00	D	17.8	Dark grey slightly sandy slightly gravelly SILT/CLAY
TP 9A	N4323	3.00	D	13.0	Brown slightly sandy slightly gravelly SILT/CLAY
TP 9A	N2325	4.00	D	11.0	Mottled grey brown slightly sandy slightly gravelly SILT/CLAY

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IGSL Ltd
Materials Laboratory
Unit 2 Industrial Estate
Newbridge
Co. Kildare
045 431971

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3

Report No.R8720 Contract No. M310 Contract Name: Aer Lingus, Dublin Airport

Client: Arups Consulting Engineers, 10Wellington Road, Dublin 4.

Samples Received: 19/11/04 Date Tested: 19/11/04 Material Type: Fill Specification: NA

Sample No.	Client Ref:	Sample Type	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
A04/1982	N4303, TP6, 1.0m Depth	B	NA	30	14	16	68	WS	4.4	C L	Brown slightly sandy slightly gravelly CLAY
A04/1985	N4324, TP9A, 4.0m Depth	B	NA	29	14	15	69	WS	4.4	C L	Brown slightly sandy slightly gravelly CLAY
A04/1989	N6637, TP12, 2.0m Depth	B	NA	39	19	20	85	WS	4.4	C I	Brown sandy slightly gravelly CLAY
A04/1990	N6638, TP7, 1.0m Depth	B	NA	30	NP	NP	36	WS	4.4		Brown slightly sandy gravelly SILT
A04/1991	N6643, TP7, 2.0m Depth	B	NA	30	14	16	65	WS	4.4	C L	Brown slightly sandy gravelly CLAY
A04/1993	N6653, TP2, 3.0m Depth	B	NA	28	13	15	53	WS	4.4	C L	Grey slightly sandy slightly gravelly CLAY
A04/1994	N6655, TP1, 1.0m Depth	B	NA	29	13	16	63	WS	4.4	C L	Brown slightly sandy gravelly CLAY
A04/1998	N6688, TP14, 2.0m Depth	B	NA	28	14	14	52	WS	4.4	C L	Brown slightly sandy slightly gravelly CLAY
A04/1999	N6695, TP10, 1.0m Depth	B	NA	56	29	27	91	WS	4.4	C H	Brown sandy slightly gravelly CLAY
A04/2002	N4334, TP8, 1.0m Depth	B	NA	30	12	18	68	WS	4.4	C L	Brown slightly sandy slightly gravelly CLAY
A04/2003	9782, Location 1, 1.10m Depth	B	NA	24	NP	NP	71	WS	4.4		Brown slightly sandy slightly gravelly SILT
A04/2004	9786, Location 1, 5.0m Depth	B	NA	27	14	13	60	WS	4.4	C L	Grey slightly sandy slightly gravelly CLAY
A04/2005	9780, Location 2, 5.0m Depth	B	NA	28	12	16	58	WS	4.4	C L	Black slightly sandy gravelly CLAY
A04/2007	9715, Location 3, 3.0M Depth	B	NA	38	17	21	86	WS	4.4	C I	Brown slightly sandy slightly gravelly CLAY
A04/2010	9788, Location 5, 1.0m Depth	B	NA	30	11	19	71	WS	4.4	C L	Brown slightly sandy slightly gravelly CLAY

Notes: Preparation: WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - bulk disturbed
U - Undisturbed

Remarks:

The results relate to the specimens tested. Any remaining material will be retained for one month.

Approved signatories:	☐ J Barrett (Technical Manager)	☑ J Langley (Laboratory Manager)	Compiled by	Date	Checked/Approved by	Date	Page
			JS	02/12/04	J Langley	02/12/04	1 of 1

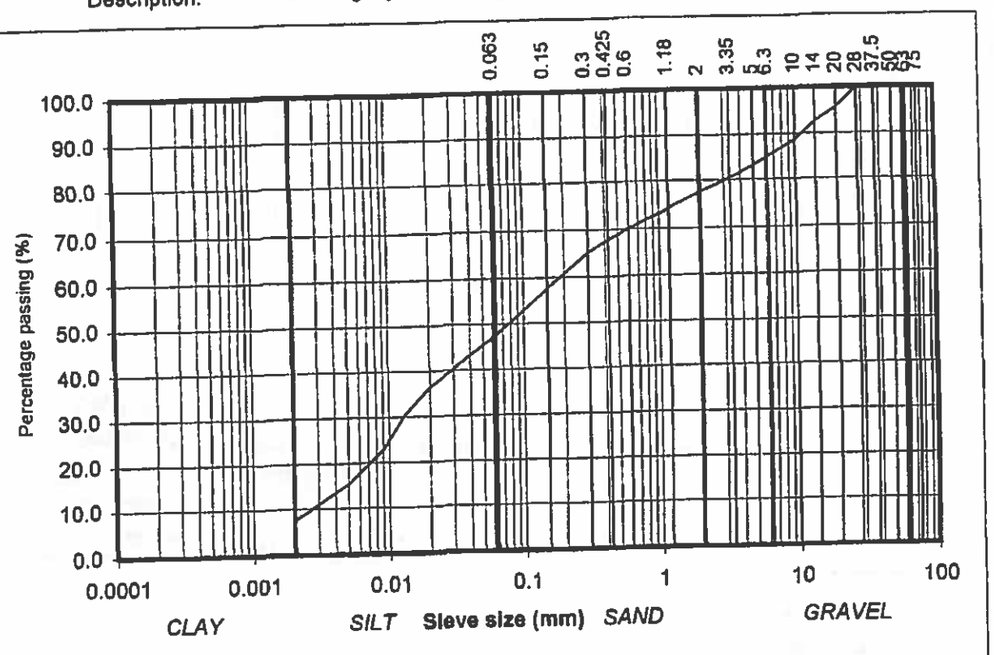
TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	100.0	
28	100.0	
20	95.6	GRAVEL
14	92.6	
10	88.7	
6.3	85.1	
5	83.2	
3.35	80.5	
2	77.5	
1.18	74.2	SAND
0.6	70.2	
0.425	67.9	
0.3	65.1	
0.15	57.6	
0.063	47.5	
0.04	43.2	
0.03	40.3	
0.02	36.4	SILT/CLAY
0.013	30.4	
0.009	22.8	
0.005	15.3	
0.002	7.5	

Contract No: M310 Report No. R8744
Contract: Aer Lingus, Dublin Airport
BH: Location 5
Sample No. 9788 Lab. Sample No. A04/2010
Depth (m): 1.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, slightly gravelly, CLAY



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Approved Signatories: ☐ J Barrett (Technical Manager) ☑ J Langley (Laboratory Manager)

TEST REPORT

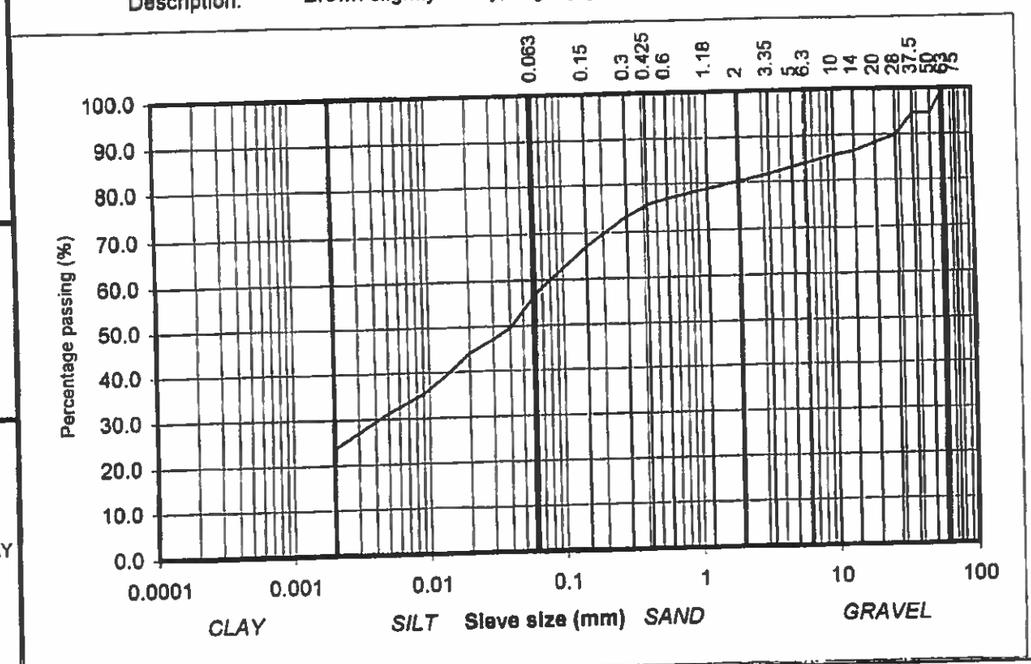
Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	94.5	
37.5	94.5	
28	89.8	
20	88.3	GRAVEL
14	86.5	
10	85.7	
6.3	84.1	
5	83.3	
3.35	81.9	
2	80.2	
1.18	78.8	
0.6	76.8	SAND
0.425	75.6	
0.3	73.4	
0.15	67.1	
0.063	57.1	
0.04	49.5	
0.03	47.1	
0.02	44.1	SILT/CLAY
0.013	39.0	
0.009	35.2	
0.005	31.2	
0.002	23.6	

Contract No: M310 Report No. R8743
Contract: Aer Lingus, Dublin Airport
BH: Location 3
Sample No. 9715 Lab. Sample No. A04/2007
Depth (m): 3.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, slightly gravelly, CLAY



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IGSL

TEST REPORT

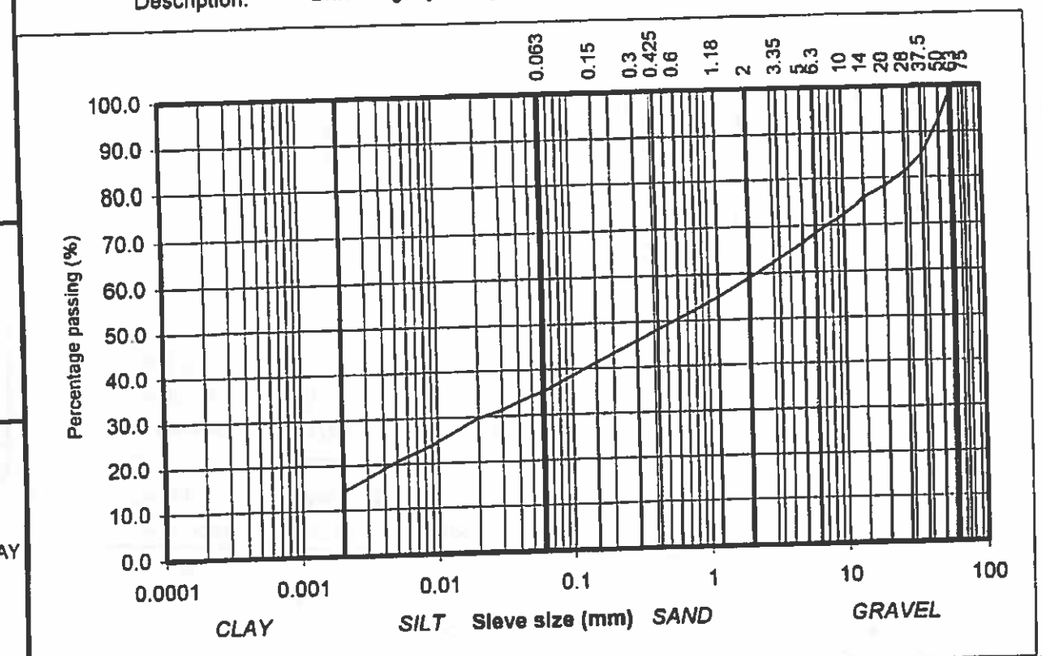
Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	92.7	
37.5	85.2	
28	81.4	
20	78.3	GRAVEL
14	75.9	
10	72.3	
6.3	68.6	
5	66.4	
3.35	63.2	
2	59.0	
1.18	55.1	
0.6	50.5	SAND
0.425	48.2	
0.3	45.9	
0.15	41.3	
0.063	35.4	
0.04	33.1	
0.03	31.4	
0.02	29.6	SILT/CLAY
0.013	26.6	
0.009	23.9	
0.005	20.5	
0.002	14.2	

Contract No: M310 Report No. R8742
Contract: Aer Lingus, Dublin Airport
BH: Location 2
Sample No. 9780 Lab. Sample No. A04/2005
Depth (m): 5.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Black slightly sandy, gravelly, CLAY



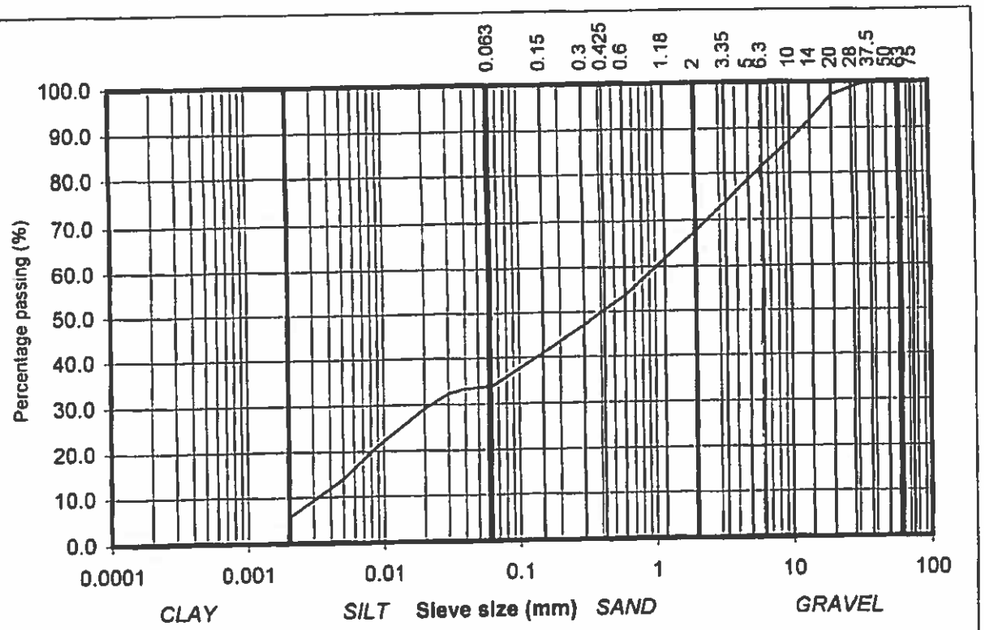
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8741
Contract: Aer Lingus, Dublin Airport
BH: Location 1
Sample No. 9786 Lab. Sample No. A04/2004
Depth (m): 5.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Grey slightly sandy, slightly gravelly, CLAY

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	100.0	
28	98.8	
20	97.1	GRAVEL
14	91.8	
10	87.2	
6.3	81.6	
5	78.8	
3.35	74.0	
2	67.7	
1.18	61.7	
0.6	53.7	SAND
0.425	50.4	
0.3	47.1	
0.15	41.0	
0.063	33.7	
0.04	33.3	
0.03	32.3	
0.02	29.1	SILT/CLAY
0.013	24.8	
0.009	21.1	
0.005	13.9	
0.002	5.8	



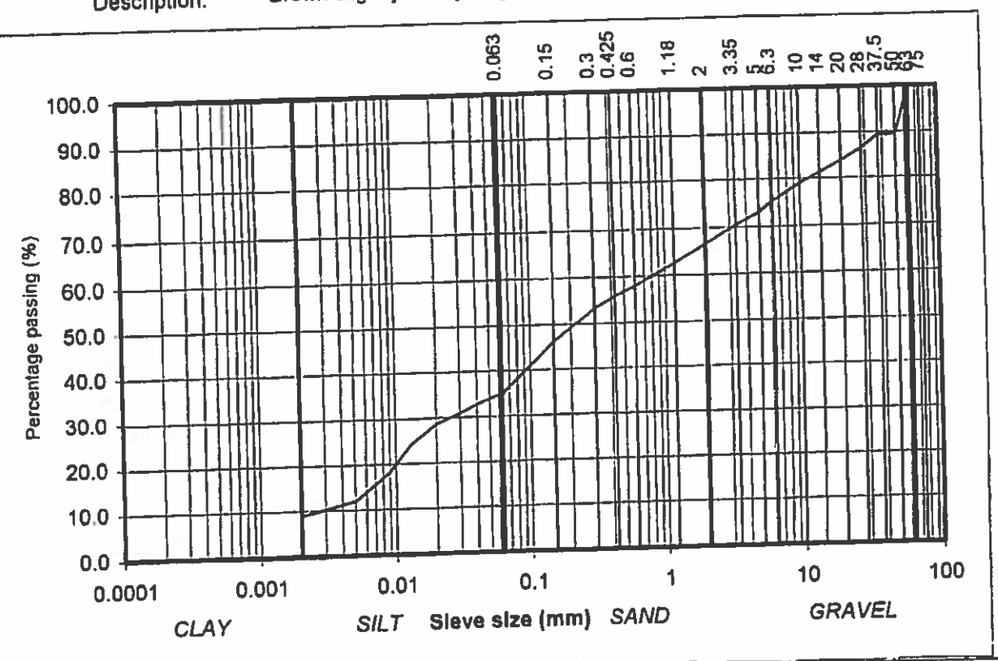
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8740
Contract: Aer Lingus, Dublin Airport
BH: Location 1
Sample No. 9782 Lab. Sample No. A04/2003
Depth (m): 1.10 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, slightly gravelly, SILT

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	89.3	
37.5	89.3	
28	86.5	
20	83.8	GRAVEL
14	81.4	
10	79.0	
6.3	75.2	
5	73.1	
3.35	70.5	
2	66.6	
1.18	62.6	
0.6	57.9	SAND
0.425	55.7	
0.3	53.2	
0.15	46.2	
0.063	35.1	
0.04	32.7	
0.03	30.9	
0.02	28.6	SILT/CLAY
0.013	24.2	
0.009	18.1	
0.005	11.9	
0.002	9.0	



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Approved Signatories: ☐ J Barrett (Technical Manager) ☑ J Langley (Laboratory Manager)

TEST REPORT

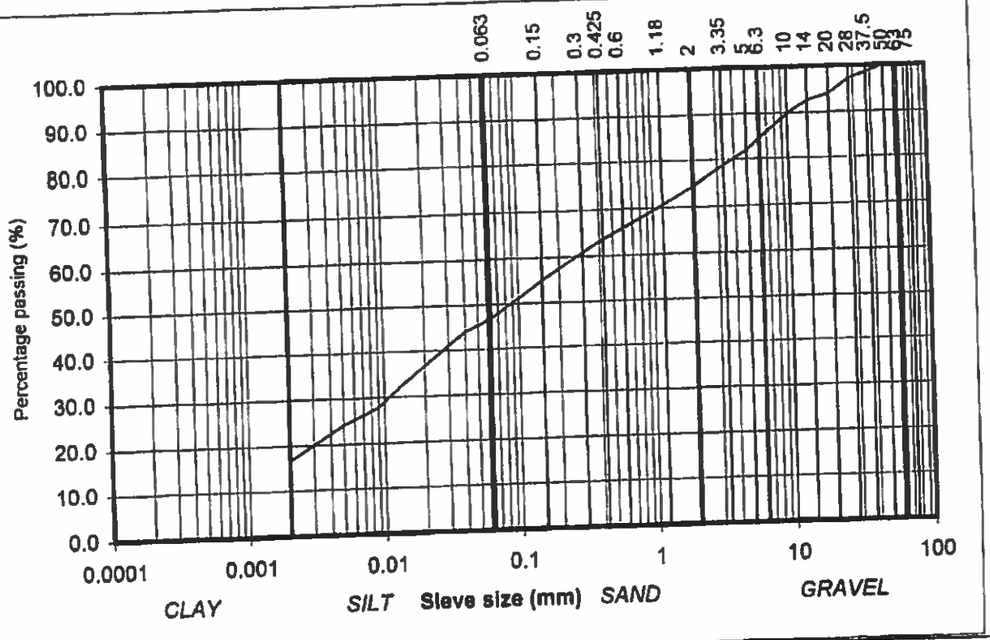
Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8739
Contract: Aer Lingus, Dublin Airport
BH: TP8
Sample No. N4334 Lab. Sample No. A04/2002
Depth (m): 1.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, slightly gravelly, CLAY

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	98.5	
28	97.2	
20	94.1	GRAVEL
14	92.6	
10	89.9	
6.3	84.6	
5	82.0	
3.35	78.8	
2	74.6	
1.18	70.7	
0.6	65.9	SAND
0.425	63.6	
0.3	60.9	
0.15	55.0	
0.063	46.7	
0.04	44.0	
0.03	41.0	
0.02	36.7	SILT/CLAY
0.013	32.1	
0.009	27.8	
0.005	24.1	
0.002	16.7	



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IGSL

TEST REPORT

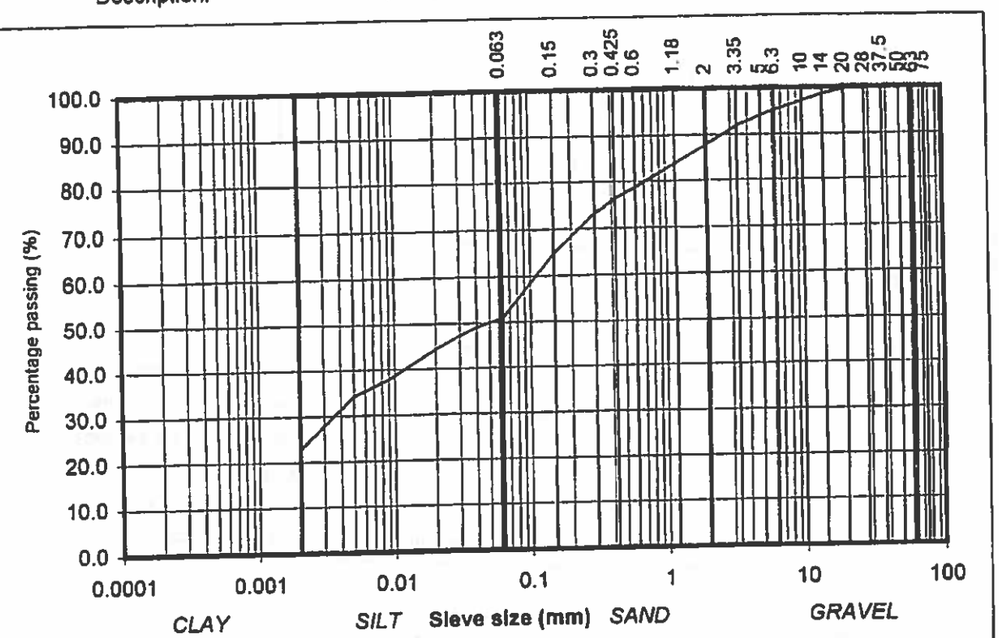
Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8738
Contract: Aer Lingus, Dublin Airport
BH: TP10
Sample No. N6695 Lab. Sample No. A04/1999
Depth (m): 1.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown sandy, slightly gravelly, CLAY

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	100.0	
28	100.0	
20	99.7	GRAVEL
14	98.6	
10	97.1	
6.3	95.2	
5	94.1	
3.35	91.8	
2	87.8	
1.18	83.8	
0.6	78.7	SAND
0.425	76.3	
0.3	73.4	
0.15	64.8	
0.063	51.1	
0.04	49.0	
0.03	47.2	
0.02	44.3	SILT/CLAY
0.013	40.8	
0.009	37.8	
0.005	34.2	
0.002	22.7	



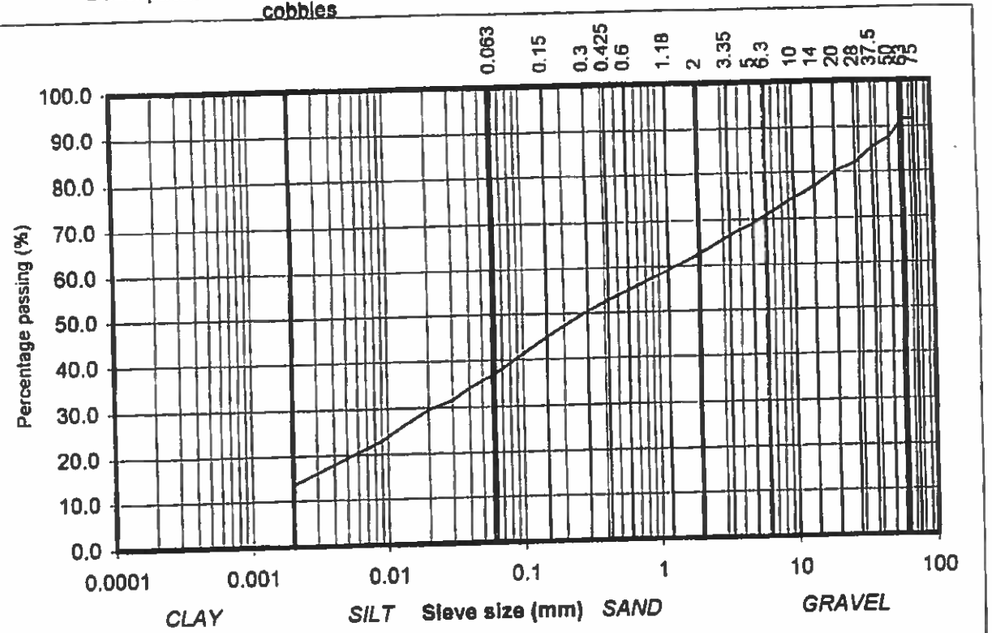
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8737
Contract: Aer Lingus, Dublin Airport
BH: TP14
Sample No. N6688 Lab. Sample No. A04/1998
Depth (m): 2.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, slightly gravelly, CLAY with some cobbles

particle size	% passing	
75	91.5	COBBLES
63	91.5	
50	87.6	
37.5	85.4	
28	82.0	
20	80.3	GRAVEL
14	77.0	
10	74.8	
6.3	71.0	
5	69.1	
3.35	66.6	
2	62.6	
1.18	59.2	
0.6	54.9	SAND
0.425	52.8	
0.3	50.3	
0.15	44.9	
0.063	37.1	
0.04	34.0	
0.03	31.6	
0.02	29.6	SILT/CLAY
0.013	26.1	
0.009	23.0	
0.005	19.3	
0.002	13.6	

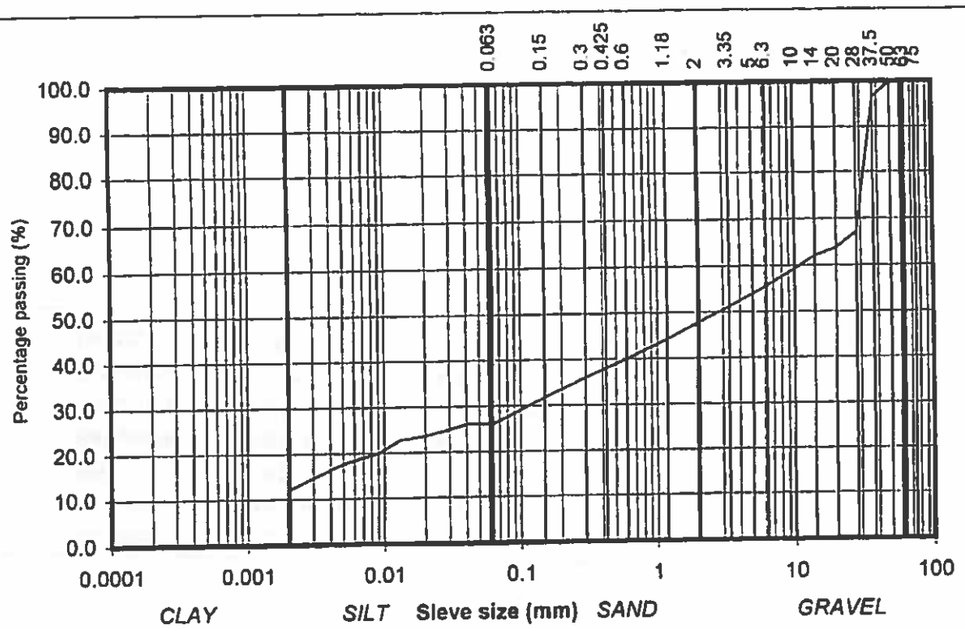


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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8736
Contract: Aer Lingus, Dublin Airport
BH: TP1
Sample No. N6655 Lab. Sample No. A04/1994
Depth (m): 1.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, gravelly, CLAY

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	96.4	
28	67.2	
20	63.7	GRAVEL
14	62.0	
10	59.2	
6.3	55.6	
5	53.9	
3.35	51.3	
2	47.7	
1.18	44.2	
0.6	40.0	SAND
0.425	38.1	
0.3	36.1	
0.15	31.8	
0.063	26.1	
0.04	26.0	
0.03	24.9	
0.02	23.6	SILT/CLAY
0.013	22.7	
0.009	19.9	
0.005	17.7	
0.002	12.0	



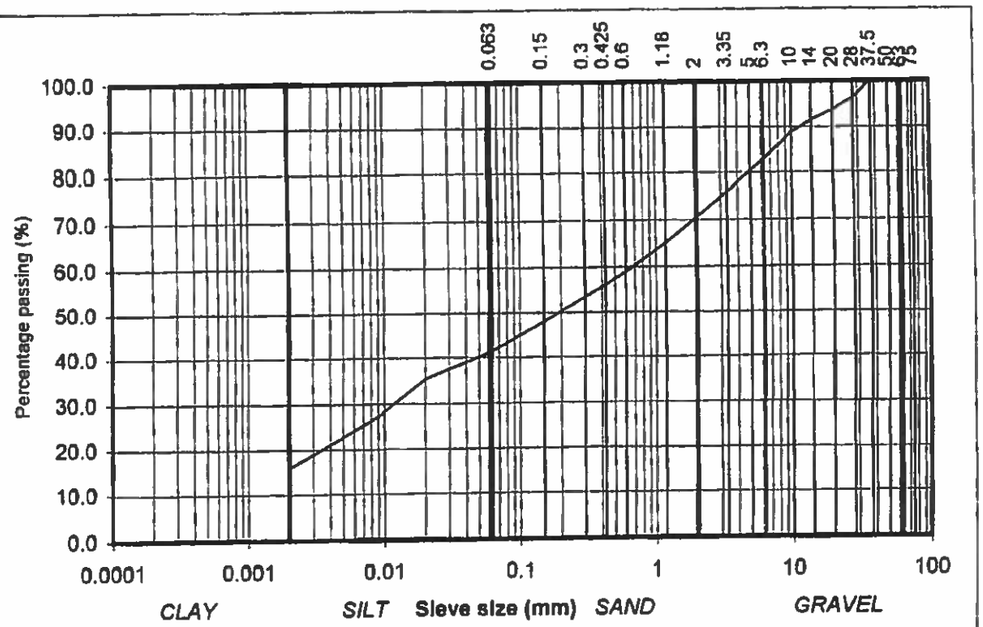
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Approved Signatories: ☐ J Barrett (Technical Manager) ☑ J Langley (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.6
(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8735
Contract: Aer Lingus, Dublin Airport
BH: TP2
Sample No. N6653 Lab. Sample No. A04/1993
Depth (m): 3.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Grey slightly sandy, slightly gravelly, CLAY

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	100.0	
28	96.3	
20	93.7	GRAVEL
14	91.5	
10	88.7	
6.3	82.9	
5	80.4	
3.35	75.9	
2	70.5	SAND
1.18	65.1	
0.6	58.9	
0.425	56.1	
0.3	53.5	
0.15	48.0	
0.063	41.4	SILT/CLAY
0.04	39.1	
0.03	37.7	
0.02	35.4	
0.013	31.0	
0.009	27.2	
0.005	22.8	
0.002	15.9	



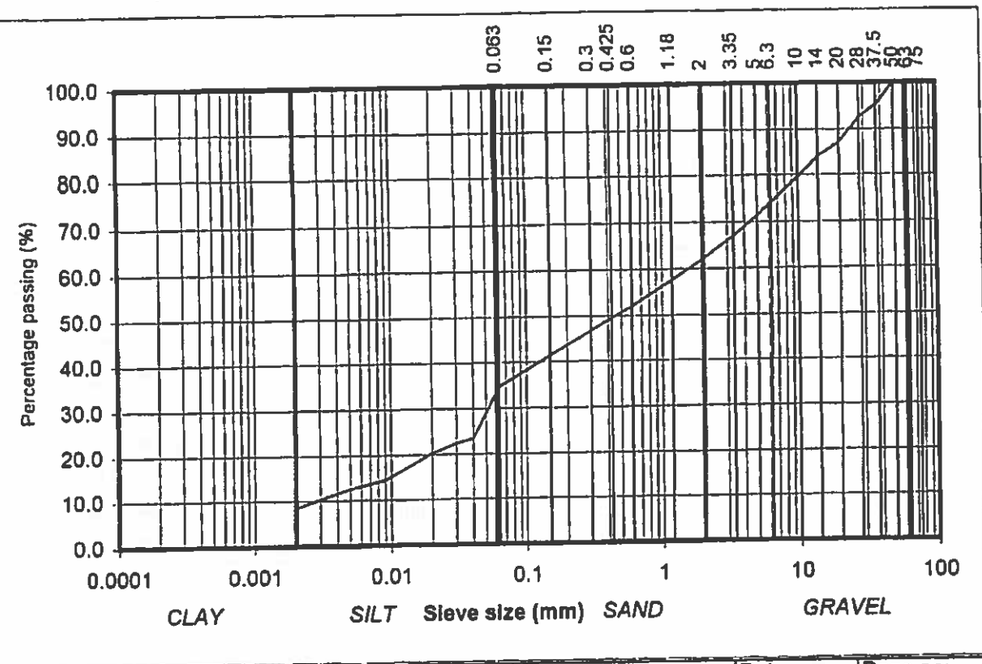
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

Contract No: M310 Report No. R8734
Contract: Aer Lingus, Dublin Airport
BH: TP7
Sample No. N6643 Lab. Sample No. A04/1991
Depth (m): 2.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, gravelly, CLAY

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	95.3	
28	92.5	
20	87.1	GRAVEL
14	84.1	
10	79.6	
6.3	74.2	
5	71.5	
3.35	67.1	
2	62.0	SAND
1.18	57.6	
0.6	52.0	
0.425	49.5	
0.3	46.8	
0.15	41.4	
0.063	34.8	SILT/CLAY
0.04	23.4	
0.03	22.4	
0.02	20.3	
0.013	17.1	
0.009	14.4	
0.005	12.6	
0.002	8.5	



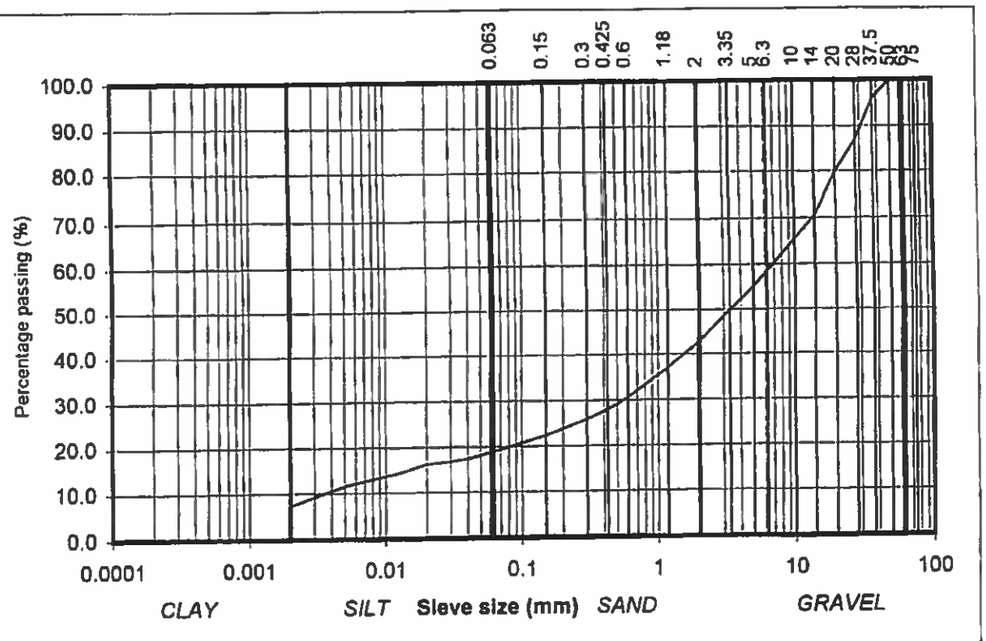
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	95.9	
28	87.0	
20	79.9	
14	70.6	GRAVEL
10	65.4	
6.3	58.5	
5	55.0	
3.35	49.9	
2	42.8	
1.18	37.0	
0.6	30.6	SAND
0.425	27.9	
0.3	25.8	
0.15	22.3	
0.063	18.8	
0.04	17.3	
0.03	16.7	
0.02	16.2	SILT/CLAY
0.013	14.5	
0.009	13.4	
0.005	11.6	
0.002	7.3	

Contract No: M310 Report No. R8733
Contract: Aer Lingus, Dublin Airport
BH: TP7
Sample No. N6638 Lab. Sample No. A04/1990
Depth (m): 1.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, gravelly, SILT



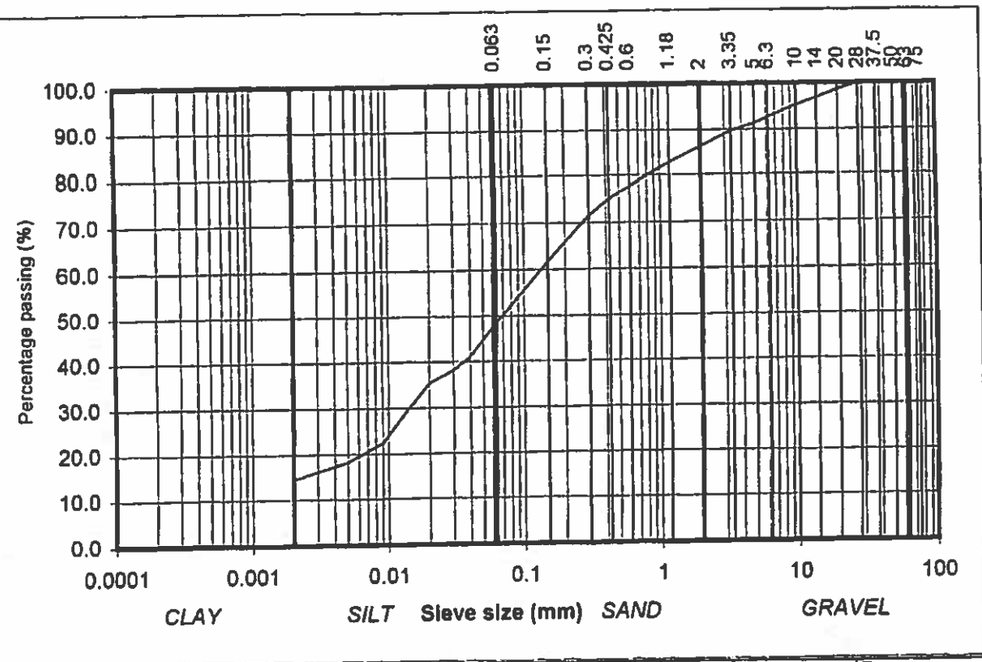
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

particle size	% passing	
75	100.0	COBBLES
63	100.0	
50	100.0	
37.5	100.0	
28	100.0	
20	98.6	
14	96.8	GRAVEL
10	95.3	
6.3	92.6	
5	91.3	
3.35	89.6	
2	86.2	
1.18	82.8	
0.6	77.9	SAND
0.425	75.2	
0.3	71.6	
0.15	61.7	
0.063	48.6	
0.04	41.2	
0.03	38.2	
0.02	35.4	SILT/CLAY
0.013	28.5	
0.009	22.3	
0.005	18.2	
0.002	14.5	

Contract No: M310 Report No. R8732
Contract: Aer Lingus, Dublin Airport
BH: TP12
Sample No. N6637 Lab. Sample No. A04/1989
Depth (m): 2.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown sandy, slightly gravelly, CLAY



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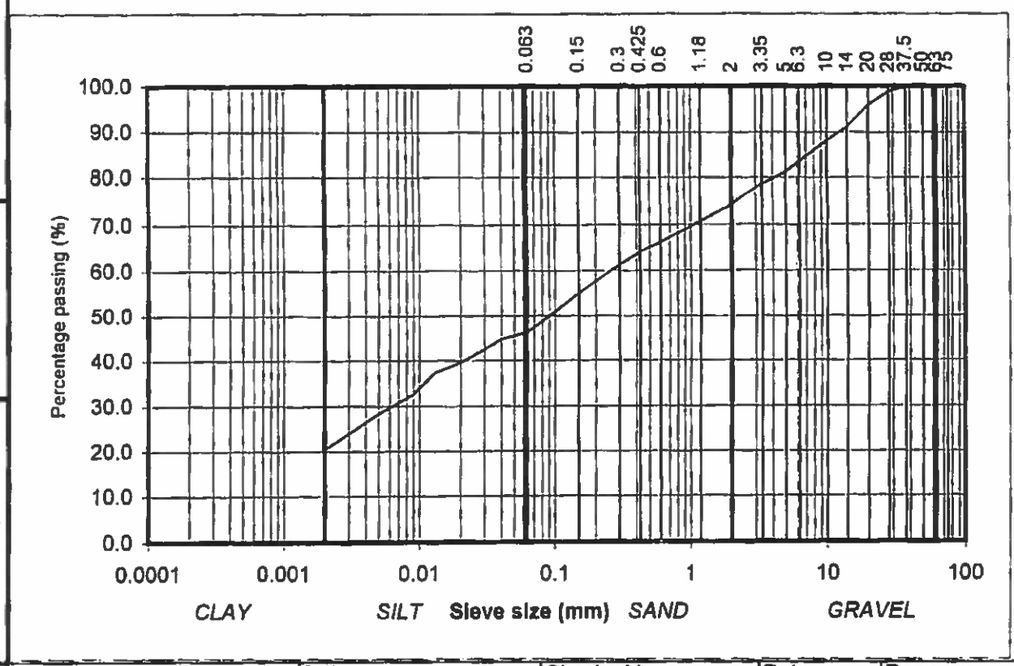
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Approved Signatories: ☐ J Barrett (Technical Manager) ☐ J Langley (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

particle size	% passing	
75	100.0	COBBLES
63	100.0	GRAVEL
50	100.0	
37.5	100.0	
28	98.8	
20	96.0	
14	91.2	
10	88.2	
6.3	83.6	
5	81.2	
3.35	78.6	
2	74.4	SAND
1.18	70.8	
0.6	66.2	
0.425	64.1	
0.3	61.3	
0.15	55.0	
0.063	46.3	SILT/CLAY
0.04	44.8	
0.03	42.4	
0.02	39.5	
0.013	37.4	
0.009	32.6	
0.005	28.4	
0.002	20.4	

Contract No: M310 Report No. R8731
Contract: Aer Lingus, Dublin Airport
BH: TP9A
Sample No. N4324 Lab. Sample No. A04/1985
Depth (m): 4.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, slightly gravelly, CLAY

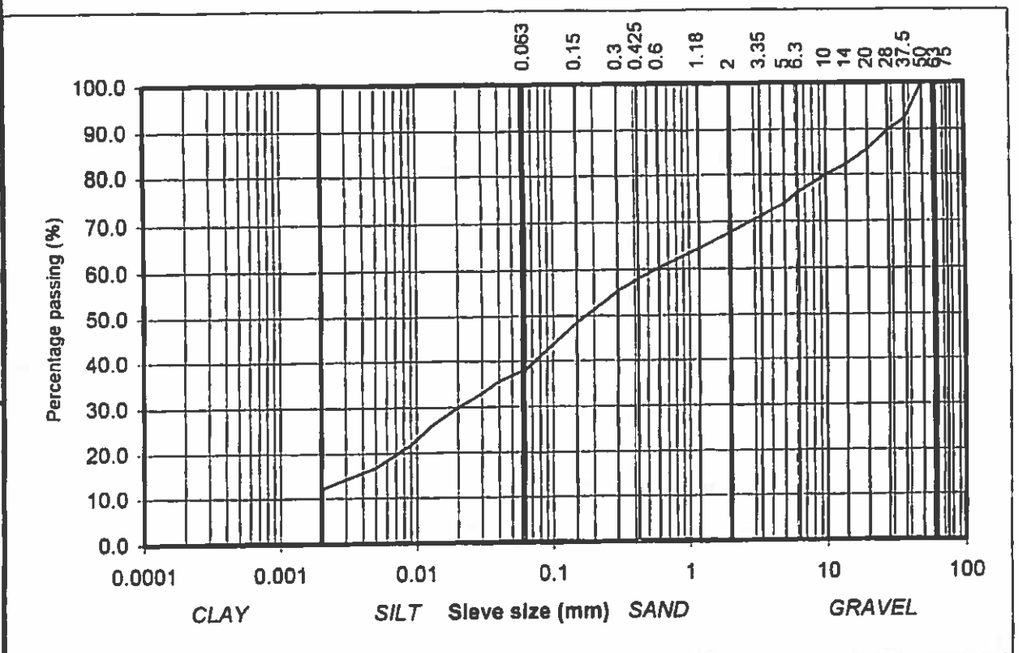


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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

particle size	% passing	
75	100.0	COBBLES
63	100.0	GRAVEL
50	100.0	
37.5	92.3	
28	89.7	
20	85.6	
14	82.3	
10	80.0	
6.3	76.2	
5	74.0	
3.35	71.3	
2	67.8	SAND
1.18	64.4	
0.6	60.3	
0.425	58.0	
0.3	55.3	
0.15	48.5	
0.063	38.1	SILT/CLAY
0.04	35.6	
0.03	33.0	
0.02	29.9	
0.013	26.1	
0.009	21.7	
0.005	16.7	
0.002	12.1	

Contract No: M310 Report No. R8730
Contract: Aer Lingus, Dublin Airport
BH: TP6
Sample No. N4303 Lab. Sample No. A04/1982
Depth (m): 1.00 Client: Arups Consulting Engineers
Date Received 19/11/2004 Date Tested 19/11/2004
Description: Brown slightly sandy, slightly gravelly, CLAY



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IGSL Ltd
Materials Laboratory
Unit 2 Industrial Estate
Newbridge
Co. Kildare
045 431971

Test Report

Determination of Moisture Condition Value (MCV) at 'natural' moisture content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R8719 **Contract No.** M310 **Contract Name:** Aer Lingus, Dublin Airport

Client: Arup Consulting Engineers, 10 Wellington Street, Dublin 4.

Samples Received: 19/11/04 **Date Tested:** 19/11/04

Sample No.	Location	Material Type	MCV	Moisture Content%	% <20mm		Description
A04/1986	N6622, TP3, 1.0m Depth	Fill	9.4	13	93		Brown sandy gravelly SILT/CLAY
A04/1988	N6631, TP12, 1.0m Depth	Fill	12.2	11	94		BLack sandy gravelly SILT/CLAY
A04/1994	N6655, TP1, 1.0m Depth	Fill	4.0	13	91		Brown slightly sandy gravelly CLAY
A04/1997	N6678, TP5, 2.0m Depth	Fill	15.3	9.0	95		Brown sandy gravelly SILT/CLAY
A04/1998	N6688, TP14, 2.0m Depth	Fill	4.5	14	92		Brown slightly sandy slightly gravelly CLAY

Notes: Interpretation of Plot:
Steepest straight line

Remarks:

The results relate to the specimens tested.

Approved signatories: ☐ J Barrett (Technical Manager) ☑ J Langley (Laboratory Manager) ☐

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Newbridge
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Test Report

Moisture Condition Value/Moisture Content Relation

BS1377:Part 4:1990, clause 5.5

Report No. R8728

Contract: Aer Lingus

Contract No. M310

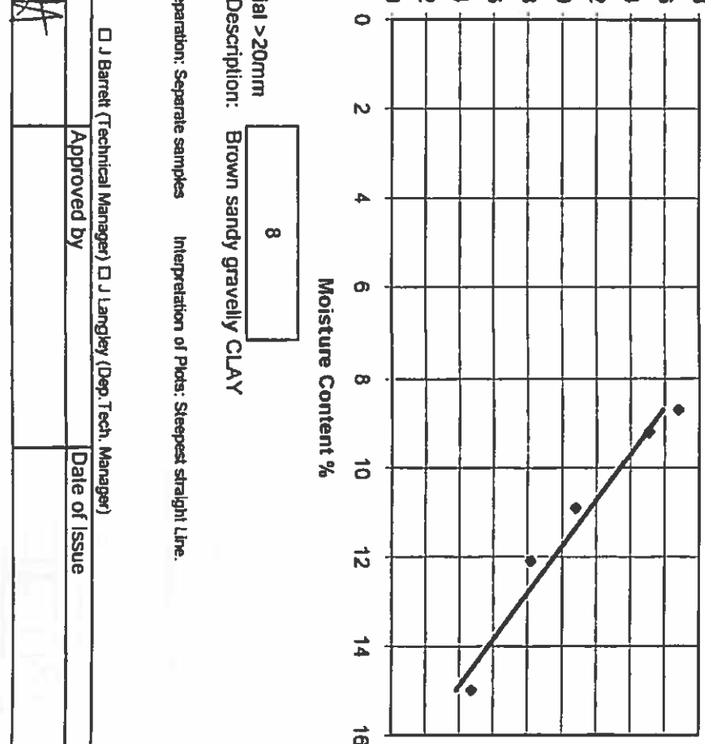
Client: Arup

Date Sampled: **Date Tested:** 19/11/2004

Sample No. A04/2001 **Sample Type** B

Location TP8/N4332 @ 2.0m

Moisture Content %	8.7	9.2	10.9	12.1	15
MCV	16.8	15.1	10.8	8.2	4.7



% Material >20mm: 8

Sample Description: Brown sandy gravelly CLAY

Sample Preparation: Separate samples Interpretation of Plots: Steepest straight Line.

Approved signatories ☐ J Barrett (Technical Manager) ☐ J Langley (Dep.Tech. Manager)

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File: R8728

Template: MCV.MC.Cal Rev 1 11/03

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Materials Laboratory
Newbridge Industrial
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Test Report

Moisture Condition Value/Moisture Content Relation
BS1377:Part 4:1990, clause 5.5

Report No. **R8729**

Contract: Aer Lingus

Contract No. M310

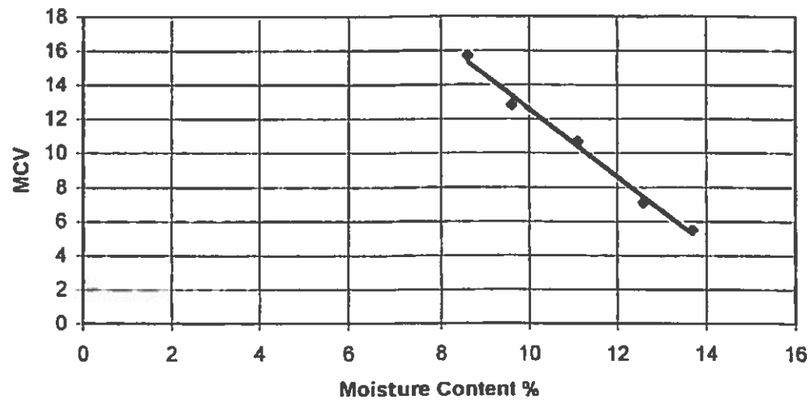
Client: Arup

Date Sampled: Date Tested: 19/11/2004

Sample No. A04/1992 Sample Type B

Location TP2/N6645 @ 1.0m

Moisture Content %	8.6	9.6	11.1	12.6	13.7
MCV	15.7	12.8	10.7	7.1	5.5



% Material >20mm 13

Sample Description: Brown sandy gravelly CLAY

Sample Preparation: Separate samples Interpretation of Plots: Steepest straight Line.

Approved signatories ☐ J Barrett (Technical Manager) ☐ J Langley (Dep.Tech. Manager)

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File: R8729 Template: MCV.MC.Cal Rev 1 11/03

Determination of California Bearing Ratio (CBR)

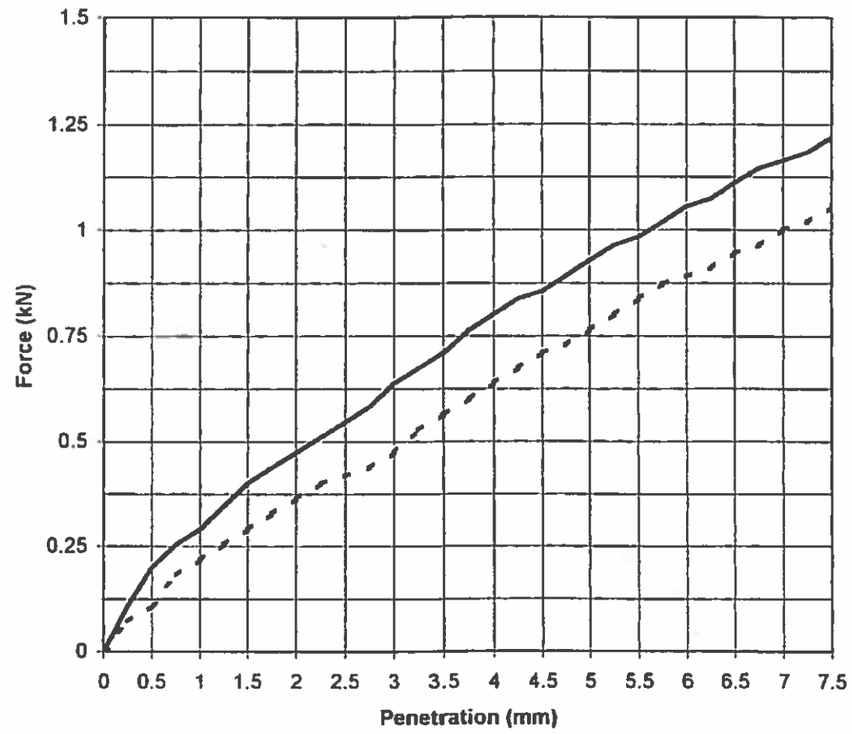
BS1377:Part 4:1990, clause 7

Report No. R8726 Lab sample no. A04/1992

Contract No. M310 Contract Aer Lingus

TP No. 2 Sample N6645 Depth (m) 1

Client Arup



Key: ——— Top ——— Base

Description: Brown sandy gravelly CLAY			
Initial Condition:	~~Soaked~~/Unsoaked	Recompacted/~~Undisturbed~~	
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.23
Surcharge (kg):	2	Dry Density (Mg/m^3):	1.98
% Material >20mm:			
Method of compaction:	2.5kg rammer		

Test Result

	Top	Base
CBR %	4.6	3.8
Average	4.2	
Moisture Content %	13	13

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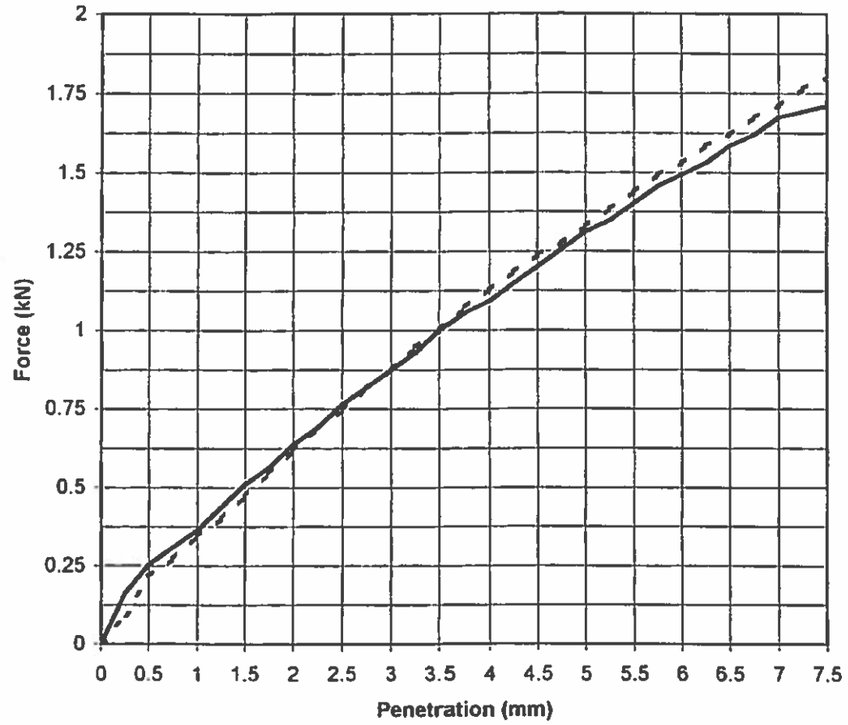
Determination of California Bearing Ratio (CBR)
BS1377:Part 4:1990, clause 7

Report No. R8724 Lab sample no. A04/1986

Contract No. M310 Contract Aer Lingus

TP No. 3 Sample N6622 Depth (m) 1

Client Arup



Key: ——— Top - - - - - - - - - Base

Description: Brown sandy gravelly CLAY			
Initial Condition:	~~Soaked~~/Unsoaked	Recompacted/~~Undisturbed~~	
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.15
Surcharge (kg):	2	Dry Density (Mg/m^3):	1.88
% Material >20mm:			
Method of compaction:	2.5kg rammer		

Test Result

	Top	Base
CBR %	6.6	6.7
Average	6.7	
Moisture Content %	14	14

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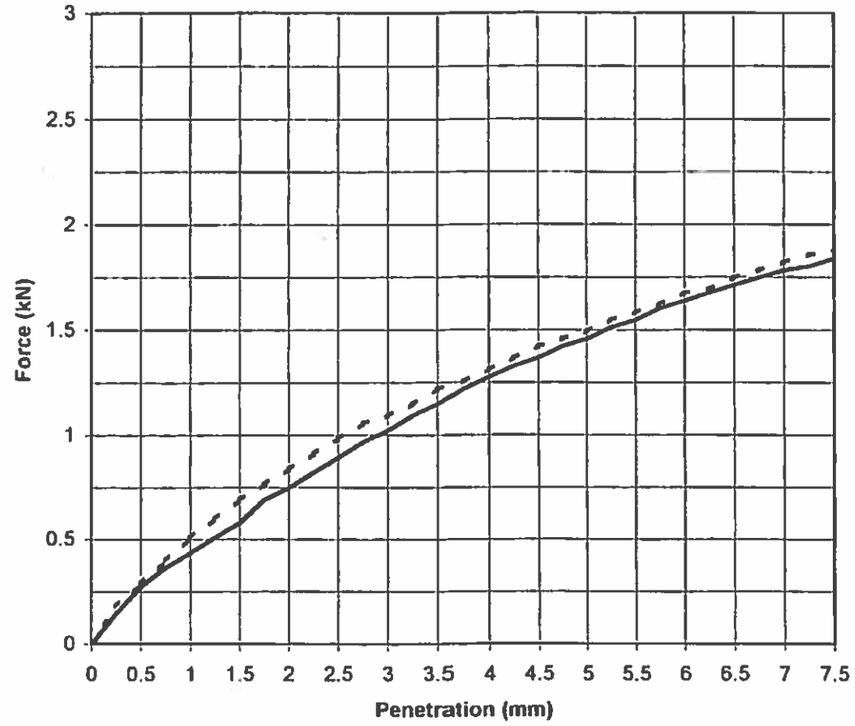
Determination of California Bearing Ratio (CBR)
BS1377:Part 4:1990, clause 7

Report No. R8722 Lab sample no. A04/1981

Contract No. M310 Contract Aer Lingus

TP No. 6 Sample N4301 Depth (m) 0.7

Client Arup



Key: ——— Top - - - - - - - - - Base

Description: Brown sandy gravelly CLAY			
Initial Condition:	~~Soaked~~/Unsoaked	Recompacted/~~Undisturbed~~	
Moisture Content (%):	23	Bulk Density (Mg/m^3):	1.94
Surcharge (kg):	2	Dry Density (Mg/m^3):	1.58
% Material >20mm:			
Method of compaction:	2.5kg rammer		

Test Result

	Top	Base
CBR %	7.3	7.5
Average	7.4	
Moisture Content %	23	23

IGSL	Compiled By	Date	Checked By	Date	Page No.
		02/12/2004			

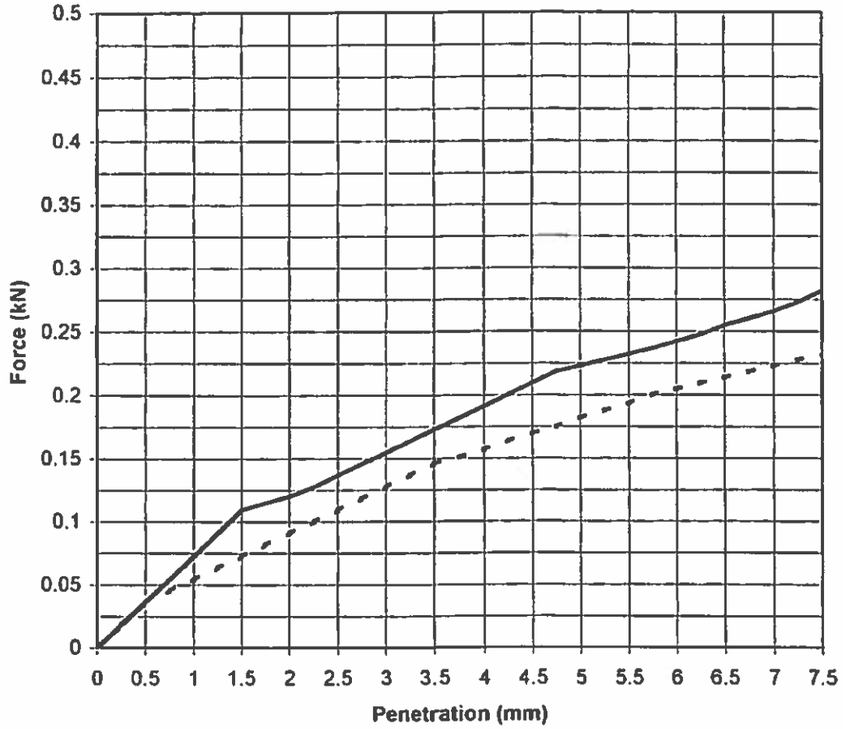
Determination of California Bearing Ratio (CBR)
BS1377:Part 4:1990, clause 7

Report No. R8725 Lab sample no. A04/1991

Contract No. M310 Contract Aer Lingus

TP No. 7 Sample N6643 Depth (m) 2

Client Arup



Key: ———— Top ---------- Base

Description: Brown sandy gravelly CLAY			
Initial Condition:	~~Soaked~~/Unsoaked	Recompacted/~~Undisturbed~~	
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.24
Surcharge (kg):	2	Dry Density (Mg/m^3):	2.00
% Material >20mm:			
Method of compaction:	2.5kg rammer		

Test Result

	Top	Base
CBR %	1.1	0.9
Average	1.0	
Moisture Content %	13	12

IGSL	Compiled By	Date	Checked By	Date	Page No.
		02/12/2004			

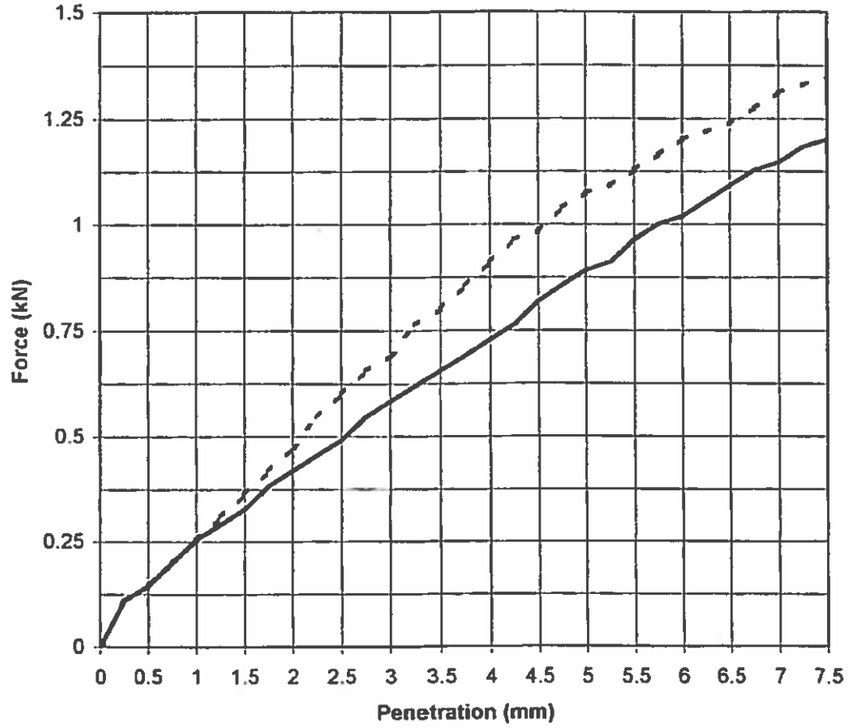
Determination of California Bearing Ratio (CBR)
BS1377:Part 4:1990, clause 7

Report No. R8723 Lab sample no. A04/1984

Contract No. M310 Contract Aer Lingus

TP No. 9A Sample N4320 Depth (m) 2

Client Arup



Key: ———— Top ---------- Base

Description: Brown sandy gravelly CLAY			
Initial Condition:	~~Soaked~~/Unsoaked	Recompacted/~~Undisturbed~~	
Moisture Content (%):	17	Bulk Density (Mg/m^3):	2.10
Surcharge (kg):	2	Dry Density (Mg/m^3):	1.80
% Material >20mm:			
Method of compaction:	2.5kg rammer		

Test Result

	Top	Base
CBR %	4.5	5.4
Average	5.0	
Moisture Content %	16	17

IGSL	Compiled By	Date	Checked By	Date	Page No.
		02/12/2004			

Determination of California Bearing Ratio (CBR)

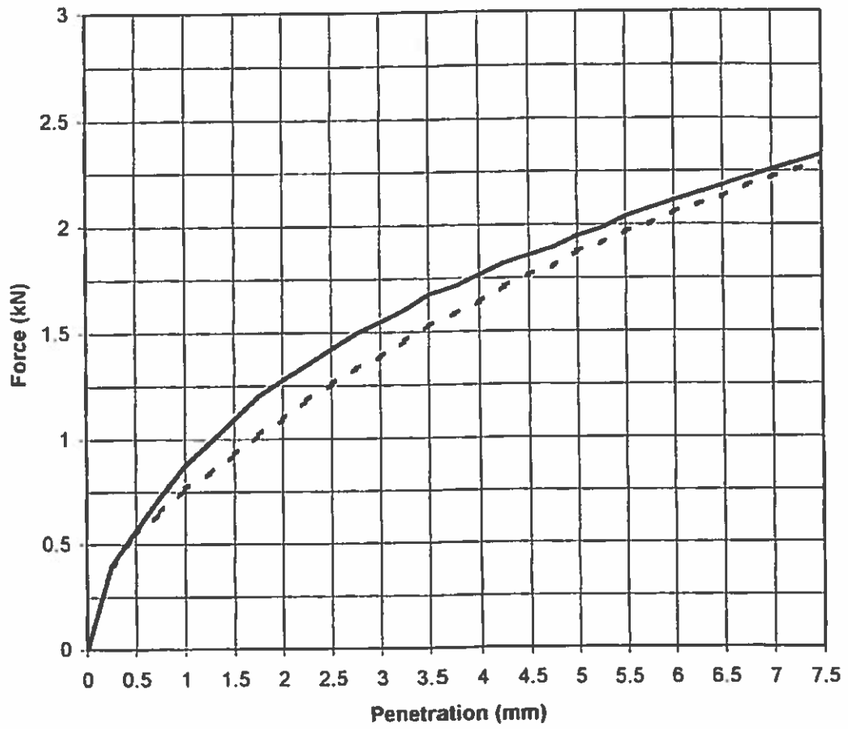
BS1377:Part 4:1990, clause 7

Report No. R8727 Lab sample no. A04/1999

Contract No. M310 Contract Aer Lingus

TP No. 10 Sample N6695 Depth (m) 1

Client Arup



Key: ———— Top ---------- Base

Description: Brown sandy gravelly CLAY			
Initial Condition:	~~Soaked~~/Unsoaked	Recompacted/~~Undisturbed~~	
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.23
Surcharge (kg):	2	Dry Density (Mg/m^3):	1.98
% Material >20mm:			
Method of compaction:	2.5kg rammer		

Test Result

	Top	Base
CBR %	11	9.6
Average	10	
Moisture Content %	32	31

IGSL	Compiled By	Date	Checked By	Date	Page No.
		02/12/2004			

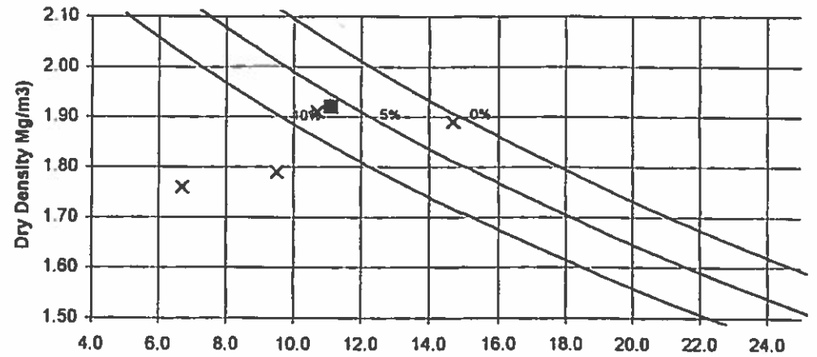
COMPACTION / CBR

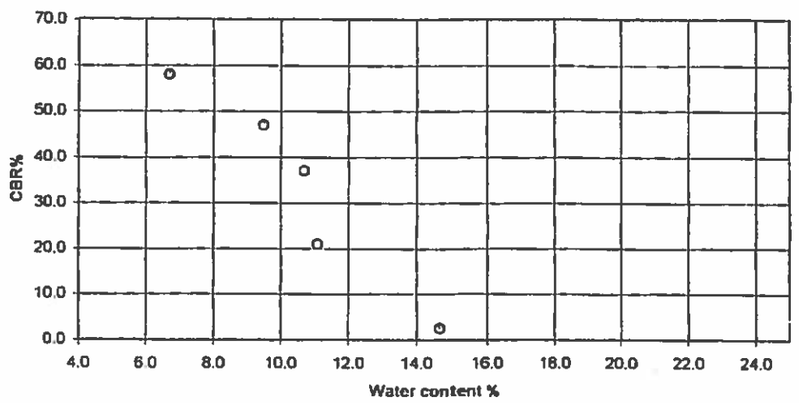
IGSL Ltd.

Number	M310	Location	TP3/N6664
Contract	Aer Lingus	Sample No.	A04/1995
Engineer	Arup	Depth (m)	1.00
Test method	2.5 kg		
Description	Brown sandy gravelly CLAY		
Passing 20 mm sieve			

RESULTS:			
	Optimum dry density	1.92	Mg/m3
	Optimum water content	11.1	%
	"as sampled" water content		%
	*Gs taken as 2.65		

Water Content %	11.1	6.7	9.5	10.7	14.7
Dry density (Mg/m3)	1.92	1.76	1.79	1.91	1.89
MCV					
CBR%	21	58	47.0	37.0	2.5





REPORT NO. **SULPHATE ANALYSIS** **IGSL**

CONTRACT: **AER LINGUS - DUBLIN AIRPORT** CONTRACT NO

BH/TP NO.	DEPTH (M)	SAMPLE NO.	SAMPLE TYPE	TEST CODE	% Passing 2mm	SULPHUR TRIOXIDE		(so3 X 1.2)	pH
						WATER SO3 g/L	TOTAL SOIL so3 %	TOTAL SOIL so 4 %	VALUE
TP 9	1.00	N4313	D	S	75.6		0.009	0.011	8.0
TP 1	1.00	N6655	D	S	75.6		0.016	0.019	8.2
TP 8	1.00	N4827	D	S	55.7		0.003	0.004	8.1
BH 3	3.00	L9714	D	S	77.9		0.019	0.023	8.1

TEST CODE: W = WATER S = SOIL A = AQUEOUS SOIL EXTRACT(2:1)

Appendix V – Laboratory Test Records (Environ)

Alcontrol Laboratories (Dublin)

18a Rosemount Business Park,
Ballycoolin,
Dublin 11
Ireland
Tel: + 353 (0) 1 8829893
Fax: + 353 (0) 1 8829895

CERTIFICATE OF ANALYSIS

Client: Irish Geotechnical Services Ltd (Newbridge)

Unit F
M7 Business Park
Naas
Co. Kildare
Ireland

Attention: John Clancy

Date: 17 November, 2004

Our Reference: 04-B04905/01

Your Reference: aerlingus

Location:

A total of 7 samples was received for analysis on Friday, 29 October 2004. Accredited laboratory tests are defined in the log sheet, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation. We are pleased to enclose our final report, it was a pleasure to be of service to you, and we look forward to our continuing association.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Signed

Ken Scally
General Manager, Ireland

Compiled By

Fiona Cleary

Alcontrol Geochemistry is a trading division of Alcontrol UK Limited
Registered in England and Wales No. 4857291

ALcontrol Laboratories Ireland

Test Schedule

Sample Type: SOIL
Location:
Client Contact: John Clancy
Client Ref: aerlingus

Ref Number: 04-B04905/01
Client: Irish Geotechnical Services Ltd (Newbridge)
Date of Receipt: 29/10/2004

Detection Method	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP
UKAS Accredited	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sample Identity	Barium	Cadmium Low Level	Chromium	Copper	Lead	Mercury Low Level	Molybdenum	Nickel	Selenium Low Level	Zinc	Dissolved Barium in CEN 10:1 Leachate	Dissolved Antimony Low Level in CEN 10:1 Leachate	Dissolved Cadmium Low Level in CEN 10:1 Leachate	Dissolved Chromium Low Level in CEN 10:1 Leachate										
ALcontrol Reference	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP IRIS	ICP USN	ICP USN	ICP USN										
04-B04905-S0028-A01	X	X	X	X	X	X	X	X	X	X		✓	✓	✓										
04-B04905-S0028-A06																								
04-B04905-S0029-A01	X	X	X	X	X	X	X	X	X	X		✓	✓	✓										
04-B04905-S0029-A21																								
04-B04905-S0029-A23																								
04-B04905-S0030-A01	X	X	X	X	X	X	X	X	X	X		✓	✓	✓										
04-B04905-S0030-A21																								
04-B04905-S0030-A23																								
04-B04905-S0031-A01	X	X	X	X	X	X	X	X	X	X		✓	✓	✓										
04-B04905-S0031-A21																								
04-B04905-S0031-A23																								
04-B04905-S0032-A01	X	X	X	X	X	X	X	X	X	X		✓	✓	✓										
04-B04905-S0032-A21																								
04-B04905-S0032-A23																								
04-B04905-S0033-A01	X	X	X	X	X	X	X	X	X	X		✓	✓	✓										
04-B04905-S0033-A21																								
04-B04905-S0033-A23																								
04-B04905-S0034-A01	X	X	X	X	X	X	X	X	X	X		✓	✓	✓										
04-B04905-S0034-A21																								
04-B04905-S0034-A23																								

Sample Identity	Other ID	P / V
TP 7 1M	UNKNOWN	Plastic tub
TP 7 1M	UNKNOWN	Amber Jar
TP 14 1M	UNKNOWN	Amber Jar
TP 14 1M	UNKNOWN	Volatile Vial
TP 14 1M	UNKNOWN	Plastic tub
TP 9 1M	UNKNOWN	Amber Jar
TP 9 1M	UNKNOWN	Volatile Vial
TP 9 1M	UNKNOWN	Plastic tub
TP 11 0.5M	UNKNOWN	Amber Jar
TP 11 0.5M	UNKNOWN	Volatile Vial
TP 11 0.5M	UNKNOWN	Plastic tub
TP 3 1M	UNKNOWN	Amber Jar
TP 3 1M	UNKNOWN	Volatile Vial
TP 3 1M	UNKNOWN	Plastic tub
TP 4 1M	UNKNOWN	Amber Jar
TP 4 1M	UNKNOWN	Volatile Vial
TP 4 1M	UNKNOWN	Plastic tub
TP 14 2M	UNKNOWN	Amber Jar
TP 14 2M	UNKNOWN	Volatile Vial
TP 14 2M	UNKNOWN	Plastic tub

Notes : NUMERIC VALUES INDICATE ADDITIONAL SCHEDULING

Checked By

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

ALcontrol Laboratories Ireland

Test Schedule

Ref Number: 04-B04905/01 | **Sample Type: SOIL**

Client: Irish Geotechnical Services Ltd (Newbridge) | Location:

Date of Receipt: 29/10/2004 | Client Contact: John Clancy

Client Ref: aerlingus

Detection Method	ICP USN	ICP USN	ICP USN	ICP USN	ICP USN	IR	KONE	KONE	KONE	KONE	LECO			
UKAS Accredited	✓	✓	✓	✓	✓		✓		✓	✓	✓			
ALcontrol Reference	Sample Identity	Other ID	P / V	Dissolved Copper Low Level in CEN 10:1 Leachate	Dissolved Lead Low Level in CEN 10:1 Leachate	Dissolved Molybdenum Low Level in CEN 10:1 Leachate	Dissolved Nickel Low Level in CEN 10:1 Leachate	Dissolved Zinc Low Level in CEN 10:1 Leachate	Dissolved Organic Carbon in CEN 10:1 Leachate	Chloride in CEN 10:1 Leachate	Fluoride in CEN 10:1 Leachate	Soluble Sulphate	Sulphate in CEN 10:1 Leachate	Total Organic Carbon**			
04-B04905-S0028-A01	TP 7 1M	UNKNOWN	Plastic tub									X		X			
04-B04905-S0028-A06	TP 7 1M	UNKNOWN	Amber Jar	X	X	X	X	X	X	X	X		X				
04-B04905-S0029-A01	TP 14 1M	UNKNOWN	Amber Jar	X	X	X	X	X	X	X	X		X				
04-B04905-S0029-A21	TP 14 1M	UNKNOWN	Volatile Vial														
04-B04905-S0029-A23	TP 14 1M	UNKNOWN	Plastic tub									X		X			
04-B04905-S0030-A01	TP 9 1M	UNKNOWN	Amber Jar	X	X	X	X	X	X	X	X		X				
04-B04905-S0030-A21	TP 9 1M	UNKNOWN	Volatile Vial														
04-B04905-S0030-A23	TP 9 1M	UNKNOWN	Plastic tub									X		X			
04-B04905-S0031-A01	TP 11 0.5M	UNKNOWN	Amber Jar	X	X	X	X	X	X	X	X		X				
04-B04905-S0031-A21	TP 11 0.5M	UNKNOWN	Volatile Vial														
04-B04905-S0031-A23	TP 11 0.5M	UNKNOWN	Plastic tub									X		X			
04-B04905-S0032-A01	TP 3 1M	UNKNOWN	Amber Jar	X	X	X	X	X	X	X	X		X				
04-B04905-S0032-A21	TP 3 1M	UNKNOWN	Volatile Vial														
04-B04905-S0032-A23	TP 3 1M	UNKNOWN	Plastic tub									X		X			
04-B04905-S0033-A01	TP 4 1M	UNKNOWN	Amber Jar	X	X	X	X	X	X	X	X		X				
04-B04905-S0033-A21	TP 4 1M	UNKNOWN	Volatile Vial														
04-B04905-S0033-A23	TP 4 1M	UNKNOWN	Plastic tub									X		X			
04-B04905-S0034-A01	TP 14 2M	UNKNOWN	Amber Jar	X	X	X	X	X	X	X	X		X				
04-B04905-S0034-A21	TP 14 2M	UNKNOWN	Volatile Vial														
04-B04905-S0034-A23	TP 14 2M	UNKNOWN	Plastic tub									X		X			

Notes : NUMERIC VALUES INDICATE ADDITIONAL SCHEDULING

Checked By

☐ Interim

☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 04-B04905/01 | **Sample Type: SOIL**

Client: Irish Geotechnical Services Ltd (Newbridge) | Location:

Date of Receipt: 29/10/2004 (of first sample) | Client Contact: John Clancy

Client Ref: aerlingus

Detection Method	AA	AA	CV AA	GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	GCMS	GCMS
Method Detection Limit	<0.02mg/kg	<0.02mg/kg	<0.0005mg/kg	<1mg/kg	<1mg/kg	n/a	<10ug/kg	<10ug/kg	<10ug/kg	<10ug/kg	<10ug/kg	<10ug/kg	<10ug/kg	<1ug/kg	<1ug/kg
UKAS Accredited				✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
ALcontrol Reference	Sample Identity	Other ID	Dissolved Arsenic Low CEN 10:1 Leachate	Dissolved Selenium Low CEN 10:1 Leachate	Dissolved Mercury Low CEN 10:1 Leachate	Diesel Range Organics	Mineral Oil by GC	DRO Interpretation	Petrol Range Organics C5-C9	Petrol Range Organics C10-12	Benzene	Toluene	Ethylbenzene	Total Xylene	MTBE	Naphthalene	Acenaphthylene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
04-B04905-S0028	TP 7 1M	UNKNOWN	<0.02	<0.02	<0.0005	<1	<1	See attached	<10	<10	<10	<10	<10	<10	<10	<1	<1
04-B04905-S0029	TP 14 1M	UNKNOWN	<0.02	<0.02	<0.0005	26	<1	See attached	<10	<10	<10	<10	<10	<10	<10	6	7
04-B04905-S0030	TP 9 1M	UNKNOWN	<0.02	<0.02	<0.0005	<1	<1	See attached	<10	<10	<10	<10	<10	<10	<10	<1	<1
04-B04905-S0031	TP 11 0.5M	UNKNOWN	<0.02	<0.02	<0.0005	<1	<1	See attached	<10	<10	<10	<10	<10	<10	<10	3	4
04-B04905-S0032	TP 3 1M	UNKNOWN	<0.02	<0.02	<0.0005	27	<1	See attached	<10	<10	<10	<10	<10	<10	<10	<1	<1
04-B04905-S0033	TP 4 1M	UNKNOWN	<0.02	<0.02	<0.0005	<1	<1	See attached	<10	<10	<10	<10	<10	<10	<10	<1	<1
04-B04905-S0034	TP 14 2M	UNKNOWN	<0.02	<0.02	<0.0005	<1	<1	See attached	<10	<10	<10	<10	<10	<10	<10	<1	<1

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. NDP = NO DETERMINATION POSSIBLE

Checked By Fiona Cleary Fiona Cleary

☐ Interim
☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 04-B04905/01
Client: Irish Geotechnical Services Ltd (Newbridge)
Date of Receipt: 29/10/2004
(of first sample)

Sample Type: SOIL
Location:
Client Contact: John Clancy
Client Ref: aerlingus

ALcontrol Reference	Sample Identity	Other ID	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(123cd)pyrene	Dibenzo(ah)anthracene	Benzo(ghi)perylene	Total 16 EPA PAHs
Detection Method			GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS
Method Detection Limit			<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg
UKAS Accredited			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
			ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
04-B04905-S0028	TP 7 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
04-B04905-S0029	TP 14 1M	UNKNOWN	6	8	54	10	50	57	68	85	42	55	38	20	27	48	581
04-B04905-S0030	TP 9 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
04-B04905-S0031	TP 11 0.5M	UNKNOWN	27	16	182	28	235	209	119	96	76	71	55	32	13	35	1200
04-B04905-S0032	TP 3 1M	UNKNOWN	<1	<1	10	1	14	13	23	10	10	12	10	5	2	6	115
04-B04905-S0033	TP 4 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
04-B04905-S0034	TP 14 2M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. NDP = NO DETERMINATION POSSIBLE

Checked By Fiona Cleary

Printed at 16:12 on 17/11/2004

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

☐ Interim
☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 04-B04905/01
Client: Irish Geotechnical Services Ltd (Newbridge)
Date of Receipt: 29/10/2004
(of first sample)

Sample Type: SOIL
Location:
Client Contact: John Clancy
Client Ref: aerlingus

ALcontrol Reference	Sample Identity	Other ID	PCB Congener 28	PCB Congener 52	PCB Congener 101	PCB Congener 118	PCB Congener 153	PCB Congener 138	PCB Congener 180	PCB Total of 7 Congeners	Natural Moisture Content	Total Dissolved Solids in CEN 10:1 Leachate	Total Phenols in CEN 10:1 Leachate	Antimony	Arsenic Low Level	Barium	Cadmium Low Level
Detection Method			GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GRAVIMETRIC	GRAVIMETRIC	HPLC	ICP	ICP	ICP	ICP
Method Detection Limit			<1 ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<1ug/kg	<0.1%	<350mg/kg	<0.1mg/kg	<1mg/kg	<0.5mg/kg	<1mg/kg	<0.5mg/kg
UKAS Accredited												✓	✓	✓	✓		✓
			ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
04-B04905-S0028	TP 7 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	8.8	793	<0.1	<1	19.7	183	2.0
04-B04905-S0029	TP 14 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	15.9	903	<0.1	1	10.1	72	1.6
04-B04905-S0030	TP 9 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	18.6	1000	<0.1	1	11.8	63	1.6
04-B04905-S0031	TP 11 0.5M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	18.6	585	<0.1	1	7.6	88	2.1
04-B04905-S0032	TP 3 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	14.7	547	<0.1	<1	11.4	56	1.9
04-B04905-S0033	TP 4 1M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	9.3	750	<0.1	<1	10.2	72	1.4
04-B04905-S0034	TP 14 2M	UNKNOWN	<1	<1	<1	<1	<1	<1	<1	<1	13.3	604	<0.1	1	10.0	44	2.1

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. NDP = NO DETERMINATION POSSIBLE

Checked By Fiona Cleary

Printed at 16:12 on 17/11/2004

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

☐ Interim
☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 04-B04905/01 **Sample Type:** SOIL

Client: Irish Geotechnical Services Ltd (Newbridge) Location:

Date of Receipt: 29/10/2004 (of first sample) Client Contact: John Clancy

Client Ref: aerlingus

ALcontrol Reference	Sample Identity	Other ID	Chromium	Copper	Lead	Mercury Low Level	Molybdenum	Nickel	Selenium Low Level	Zinc	Dissolved Barium in CEN 10:1 Leachate	Dissolved Cadmium Low in CEN 10:1 Leachate	Dissolved Chromium Low in CEN 10:1 Leachate	Dissolved Copper Low in CEN 10:1 Leachate	Dissolved Lead Low in CEN 10:1 Leachate	Dissolved Molybdenum Low in CEN 10:1 Leachate	Dissolved Nickel Low in CEN 10:1 Leachate
Detection Method			ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP IRIS	ICP USN	ICP USN	ICP USN	ICP USN	ICP USN	ICP USN
Method Detection Limit			<1mg/kg	<1mg/kg	<1mg/kg	<0.3mg/kg	<1mg/kg	<1mg/kg	<0.5mg/kg	<1mg/kg	<0.5mg/kg	<0.004mg/kg	<0.01mg/kg	<0.05mg/kg	<0.05mg/kg	<0.05mg/kg	<0.1mg/kg
UKAS Accredited			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
04-B04905-S0028	TP 7 1M	UNKNOWN	26	89	273	<0.3	3	47	<0.5	279	0.5	<0.004	0.12	<0.05	<0.05	<0.05	<0.1
04-B04905-S0029	TP 14 1M	UNKNOWN	23	122	30	<0.3	3	45	<0.5	108	1.0	<0.004	0.12	<0.05	<0.05	<0.05	<0.1
04-B04905-S0030	TP 9 1M	UNKNOWN	30	31	31	<0.3	2	51	<0.5	116	0.8	<0.004	0.11	<0.05	<0.05	<0.05	<0.1
04-B04905-S0031	TP 11 0.5M	UNKNOWN	30	30	42	<0.3	3	52	<0.5	128	0.7	<0.004	0.15	0.06	<0.05	<0.05	<0.1
04-B04905-S0032	TP 3 1M	UNKNOWN	22	30	30	<0.3	4	49	<0.5	102	0.7	<0.004	0.12	<0.05	<0.05	<0.05	<0.1
04-B04905-S0033	TP 4 1M	UNKNOWN	26	27	18	<0.3	3	52	<0.5	96	1.3	<0.004	0.12	<0.05	<0.05	<0.05	<0.1
04-B04905-S0034	TP 14 2M	UNKNOWN	23	30	20	<0.3	4	53	<0.5	119	0.8	0.008	0.19	0.10	<0.05	<0.05	<0.1

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. NDP = NO DETERMINATION POSSIBLE

Checked By Fiona Cleary

Printed at 16:12 on 17/11/2004 * SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

☐ Interim
☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 04-B04905/01 Sample Type: SOIL

Client: Irish Geotechnical Services Ltd (Newbridge) Location:

Date of Receipt: 29/10/2004 (of first sample) Client Contact: John Clancy

Client Ref: aerlingus

ALcontrol Reference	Sample Identity	Other ID	Dissolved Zinc Low in CEN 10:1 Leachate	Dissolved Antimony Low in CEN 10:1 Leachate	Dissolved Organic Carbon in CEN 10:1 Leachate	Chloride in CEN 10:1 Leachate	Fluoride in CEN 10:1 Leachate	Soluble Sulphate 2:1 Extract	Sulphate in CEN 10:1 Leachate	Total Organic Carbon**
Detection Method			ICP USN	ICP USN	IR	KONE	KONE	KONE	KONE	LECO
Method Detection Limit			<0.05mg/kg	<0.05mg/kg	<20mg/kg	<10mg/kg	<1mg/kg	<0.003g/l	<30mg/kg	<0.01%
UKAS Accredited			✓	✓		✓		✓	✓	✓
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/l	mg/kg	%
04-B04905-S0028	TP 7 1M	UNKNOWN	<0.05	<0.05	23	21	2	0.009	32	0.36
04-B04905-S0029	TP 14 1M	UNKNOWN	0.15	<0.05	42	17	2	0.012	<30	0.70
04-B04905-S0030	TP 9 1M	UNKNOWN	0.13	<0.05	26	15	3	0.023	41	0.44
04-B04905-S0031	TP 11 0.5M	UNKNOWN	0.13	<0.05	28	14	2	<0.003	<30	1.21
04-B04905-S0032	TP 3 1M	UNKNOWN	<0.05	<0.05	26	10	3	0.031	40	0.61
04-B04905-S0033	TP 4 1M	UNKNOWN	<0.05	<0.05	<20	23	3	0.008	<30	0.32
04-B04905-S0034	TP 14 2M	UNKNOWN	0.07	<0.05	30	<10	2	<0.003	<30	0.49

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. NDP = NO DETERMINATION POSSIBLE

Checked By Fiona Cleary

Printed at 16:12 on 17/11/2004 * SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

Alcontrol Laboratories Dublin

Diesel Range Organics
by
G.C.

Client Name Irish Geotechnical Services Ltd (Newbridge) Job Number B04905 Separatory Funnel Ext No
Client Ref aerlingus Date Extracted/Prepared 05/11/2004 Soxtec Extraction No
Sample Matrix Soil Date Analysed 08/11/2004 Column Extraction No

Sample number	Sample Identity	Depth	Diesel Range Hydrocarbons (mg/kg)	Mineral Oil (mg/kg)	Interpretation
028	TP 7	1m	< 1	< 1	No Identification Possible
029	TP 14	1m	26	< 1	No Identification Possible
030	TP 9	1m	< 1	< 1	No Identification Possible
031	TP 11	0.5m	< 1	< 1	No Identification Possible
032	TP 3	1m	27	< 1	No Identification Possible
033	TP 4	1m	< 1	< 1	No Identification Possible
034	TP 14	2m	< 1	< 1	No Identification Possible

Checked by .....

Authorised by-: .....

ALCONTROL GEOCHEM (IRELAND)

Gasoline Range Organics
by
GC-FID

Job Number = DUB-04-B04905 Sample Type = Soil
Client = Irish Geotechnical Services Ltd (Newbridge) Location = -
Client Ref = aerlingus Date Extracted = 8/11/4
Contact = - Date Analysed = 8/11/4

Sample number	C5 - C9 µg/kg	C10- C12 µg/kg	Total GRO µg/kg
S0028	<10	<10	<10
S0029	<10	<10	<10
S0030	<10	<10	<10
S0031	<10	<10	<10
S0032	<10	<10	<10
S0033	<10	<10	<10
S0034	<10	<10	<10

Checked by: .....

Authorised by: .....

dge)

Geochem Analytical Services

BTEX (MTBE) Analysis
By
G.C.

Job No: DUB-04-B04905
Client: Irish Geotechnical Services Ltd (Newbridge)
Client Ref: aerlingus
Date Extracted 8/11/4
Date Analysed 8/11/4
Matrix: Soil
Units: µg/kg

Smpl No	Sample Ref	Depth m/ft	MTBE	Benzene	Toluene	Ethyl Benzene	Total Xylene
S0028	TP 7	1M	<10	<10	<10	<10	<10
S0029	TP 14	1M	<10	<10	<10	<10	<10
S0030	TP9	1M	<10	<10	<10	<10	<10
S0031	TP 11	0.5M	<10	<10	<10	<10	<10
S0032	TP3	1M	<10	<10	<10	<10	<10
S0033	TP 4	1M	<10	<10	<10	<10	<10
S0034	TP 14	2M	<10	<10	<10	<10	<10

Checked by: G. Kenny

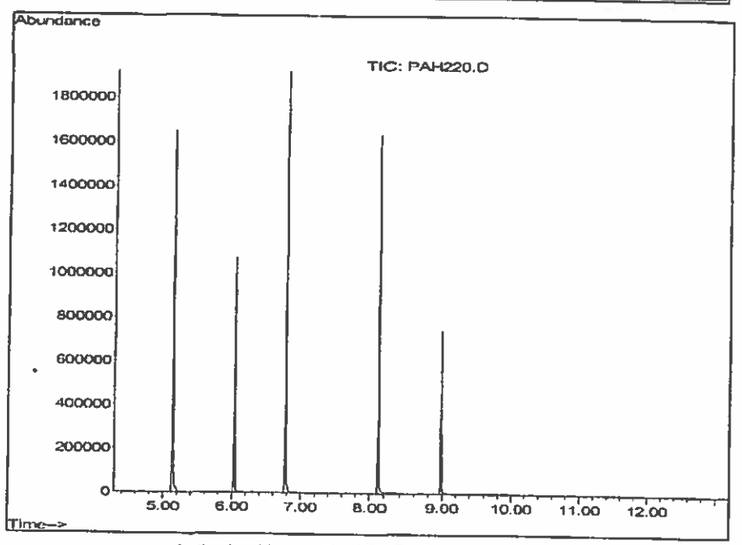
Authorised by-: E. Bennett

ALcontrol Geochem

16 PAH Analysis

Sample Identity - B04905-S0028 TP7 1m
Client / Sample matrix - Irish Geotechnical Services Ltd/Soil
Units - µg/kg

CAS Number	Compound	Concentration
91-20-3	Naphthalene	<1
208-96-8	Acenaphthylene	<1
83-32-9	Acenaphthene	<1
86-73-7	Fluorene	<1
85-01-8	Phenanthrene	<1
120-12-7	Anthracene	<1
206-44-0	Fluoranthene	<1
129-00-0	Pyrene	<1
56-55-3	Benz(a)anthracene	<1
218-01-9	Chrysene	<1
205-99-2	Benzo(b)fluoranthene	<1
207-08-9	Benzo(k)fluoranthene	<1
50-32-8	Benzo(a)pyrene	<1
193-39-5	Indeno(123cd)pyrene	<1
53-70-3	Dibenzo(ah)anthracene	<1
191-24-2	Benzo(ghi)perylene	<1
	Total of 16 PAH's	<1



Authorised by:___Patricia Corrigan_____

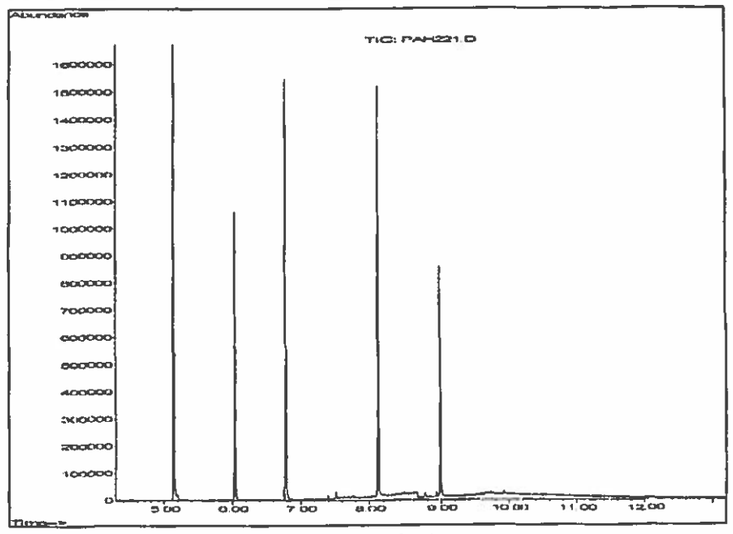
Date Extracted : ___05/11/04__

ALcontrol Geochem

16 PAH Analysis

Sample Identity - B04905-S0029 TP14 1m
Client / Sample matrix - Irish Geotechnical Services Ltd/Soil
Units - µg/kg

CAS Number	Compound	Concentration
91-20-3	Naphthalene	6
208-96-8	Acenaphthylene	7
83-32-9	Acenaphthene	6
86-73-7	Fluorene	8
85-01-8	Phenanthrene	54
120-12-7	Anthracene	10
206-44-0	Fluoranthene	50
129-00-0	Pyrene	57
56-55-3	Benz(a)anthracene	68
218-01-9	Chrysene	85
205-99-2	Benzo(b)fluoranthene	42
207-08-9	Benzo(k)fluoranthene	55
50-32-8	Benzo(a)pyrene	38
193-39-5	Indeno(123cd)pyrene	20
53-70-3	Dibenzo(ah)anthracene	27
191-24-2	Benzo(ghi)perylene	48
	Total of 16 PAH's	581



Authorised by:___Patricia Corrigan_____

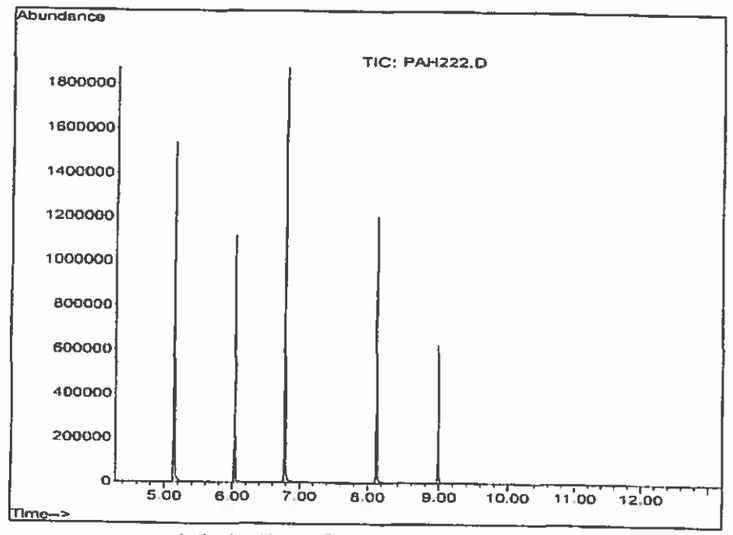
Date Extracted : ___05/11/04__

ALcontrol Geochem

16 PAH Analysis

Sample Identity - B04905-S0030 TP9 1m
Client / Sample matrix - Irish Geotechnical Services Ltd/Soil
Units - µg/kg

CAS Number	Compound	Concentration
91-20-3	Naphthalene	<1
208-96-8	Acenaphthylene	<1
83-32-9	Acenaphthene	<1
86-73-7	Fluorene	<1
85-01-8	Phenanthrene	<1
120-12-7	Anthracene	<1
206-44-0	Fluoranthene	<1
129-00-0	Pyrene	<1
56-55-3	Benz(a)anthracene	<1
218-01-9	Chrysene	<1
205-99-2	Benzo(b)fluoranthene	<1
207-08-9	Benzo(k)fluoranthene	<1
50-32-8	Benzo(a)pyrene	<1
193-39-5	Indeno(123cd)pyrene	<1
53-70-3	Dibenzo(ah)anthracene	<1
191-24-2	Benzo(ghi)perylene	<1
	Total of 16 PAH's	<1



Authorised by:___Patricia Corrigan_____

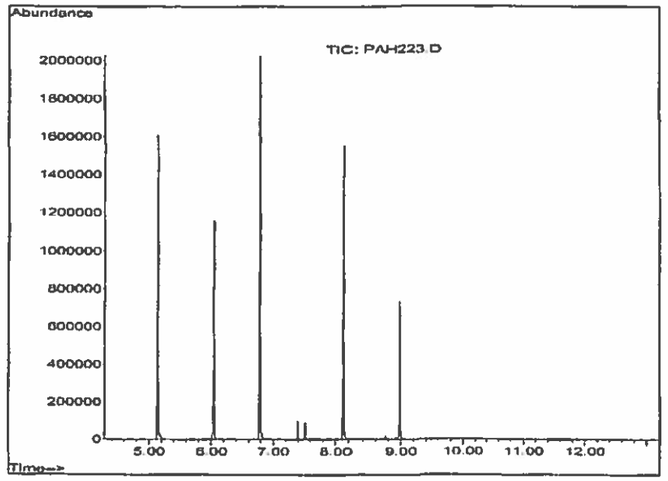
Date Extracted : ___05/11/04__

ALcontrol Geochem

16 PAH Analysis

Sample Identity - B04905-S0031 TP11 0.5m
Client / Sample matrix - Irish Geotechnical Services Ltd/Soil
Units - µg/kg

CAS Number	Compound	Concentration
91-20-3	Naphthalene	3
208-96-8	Acenaphthylene	4
83-32-9	Acenaphthene	27
86-73-7	Fluorene	16
85-01-8	Phenanthrene	182
120-12-7	Anthracene	28
206-44-0	Fluoranthene	235
129-00-0	Pyrene	209
56-55-3	Benz(a)anthracene	119
218-01-9	Chrysene	96
205-99-2	Benzo(b)fluoranthene	76
207-08-9	Benzo(k)fluoranthene	71
50-32-8	Benzo(a)pyrene	55
193-39-5	Indeno(123cd)pyrene	32
53-70-3	Dibenzo(ah)anthracene	13
191-24-2	Benzo(ghi)perylene	35
	Total of 16 PAH's	1200



Authorised by:___Patricia Corrigan_____

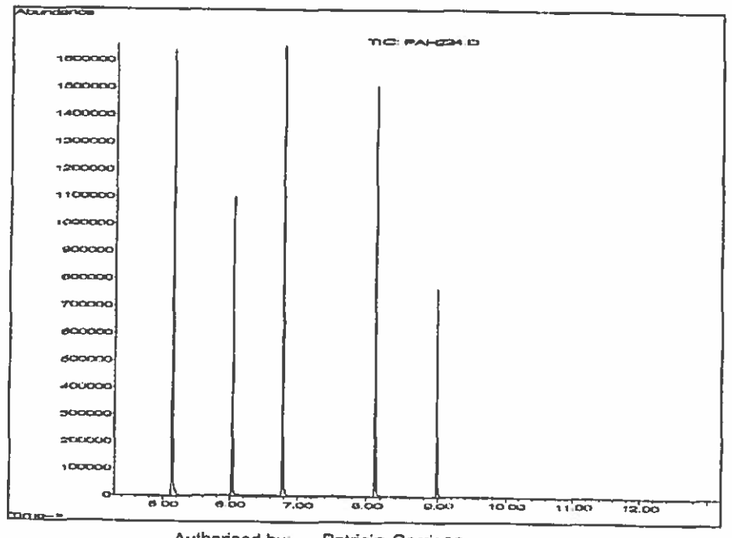
Date Extracted : ___05/11/04__

ALcontrol Geochem

16 PAH Analysis

Sample Identity - B04905-S0032 TP3 1m
Client / Sample matrix - Irish Geotechnical Services Ltd/Soil
Units - µg/kg

CAS Number	Compound	Concentration
91-20-3	Naphthalene	<1
208-96-8	Acenaphthylene	<1
83-32-9	Acenaphthene	<1
86-73-7	Fluorene	<1
85-01-8	Phenanthrene	10
120-12-7	Anthracene	1
206-44-0	Fluoranthene	14
129-00-0	Pyrene	13
56-55-3	Benz(a)anthracene	23
218-01-9	Chrysene	10
205-99-2	Benzo(b)fluoranthene	10
207-08-9	Benzo(k)fluoranthene	12
50-32-8	Benzo(a)pyrene	10
193-39-5	Indeno(123cd)pyrene	5
53-70-3	Dibenzo(ah)anthracene	2
191-24-2	Benzo(ghi)perylene	6
	Total of 16 PAH's	115



Authorised by:___Patricia Corrigan_____

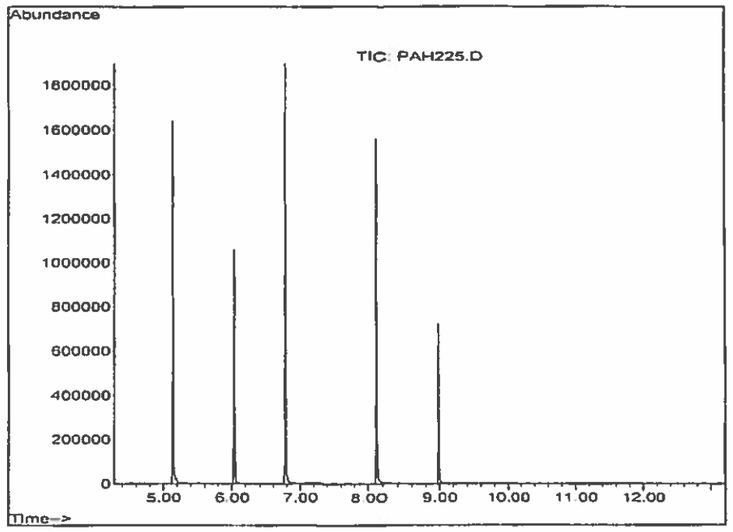
Date Extracted : ___05/11/04__

ALcontrol Geochem

16 PAH Analysis

Sample Identity - B04905-S0033 TP4 1m
Client / Sample matrix - Irish Geotechnical Services Ltd/Soil
Units - µg/kg

CAS Number	Compound	Concentration
91-20-3	Naphthalene	<1
208-96-8	Acenaphthylene	<1
83-32-9	Acenaphthene	<1
86-73-7	Fluorene	<1
85-01-8	Phenanthrene	<1
120-12-7	Anthracene	<1
206-44-0	Fluoranthene	<1
129-00-0	Pyrene	<1
56-55-3	Benz(a)anthracene	<1
218-01-9	Chrysene	<1
205-99-2	Benzo(b)fluoranthene	<1
207-08-9	Benzo(k)fluoranthene	<1
50-32-8	Benzo(a)pyrene	<1
193-39-5	Indeno(123cd)pyrene	<1
53-70-3	Dibenzo(ah)anthracene	<1
191-24-2	Benzo(ghi)perylene	<1
	Total of 16 PAH's	<1



Authorised by:___Patricia Corrigan_____

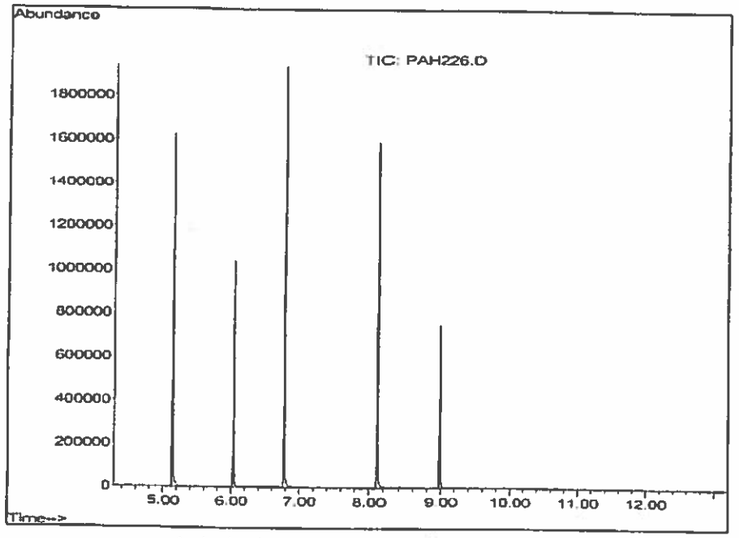
Date Extracted : ___05/11/04__

ALcontrol Geochem

16 PAH Analysis

Sample Identity - B04905-S0034 TP14 2m
Client / Sample matrix - Irish Geotechnical Services Ltd/Soil
Units - µg/kg

CAS Number	Compound	Concentration
91-20-3	Naphthalene	<1
208-96-8	Acenaphthylene	<1
83-32-9	Acenaphthene	<1
86-73-7	Fluorene	<1
85-01-8	Phenanthrene	<1
120-12-7	Anthracene	<1
206-44-0	Fluoranthene	<1
129-00-0	Pyrene	<1
56-55-3	Benz(a)anthracene	<1
218-01-9	Chrysene	<1
205-99-2	Benzo(b)fluoranthene	<1
207-08-9	Benzo(k)fluoranthene	<1
50-32-8	Benzo(a)pyrene	<1
193-39-5	Indeno(123cd)pyrene	<1
53-70-3	Dibenzo(ah)anthracene	<1
191-24-2	Benzo(ghi)perylene	<1
	Total of 16 PAH's	<1



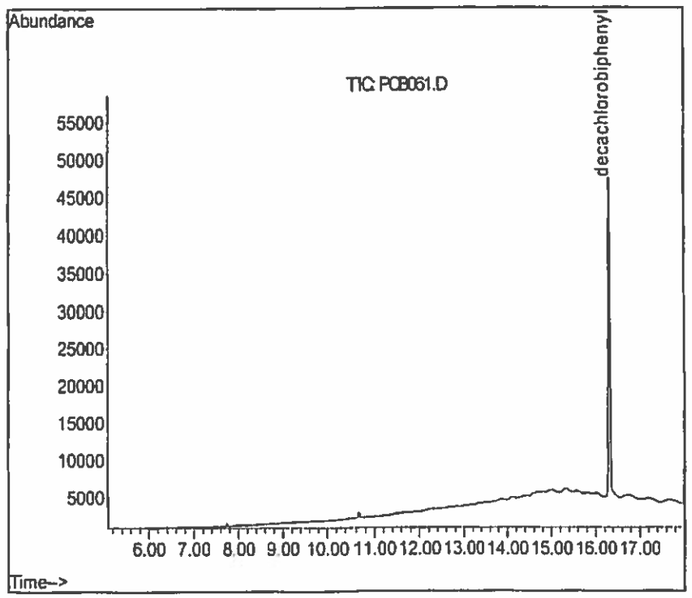
Authorised by:___Patricia Corrigan_____

Date Extracted : ___05/11/04__

EC7 PCB Congeners

Sample Identity - B04905-S0030 TP 9 1M
Client / Sample matrix - Irish Geotechnical Services Lt
Units - µg/kg

CAS Number	Compound	Concentration
7012-37-5	PCB congener 28	<1
35693-99-3	PCB congener 52	<1
37680-73-2	PCB congener 101	<1
31508-00-6	PCB congener 118	<1
35065-27-1	PCB congener 153	<1
35065-28-2	PCB congener 138	<1
35065-29-3	PCB congener 180	<1
	Total	<1

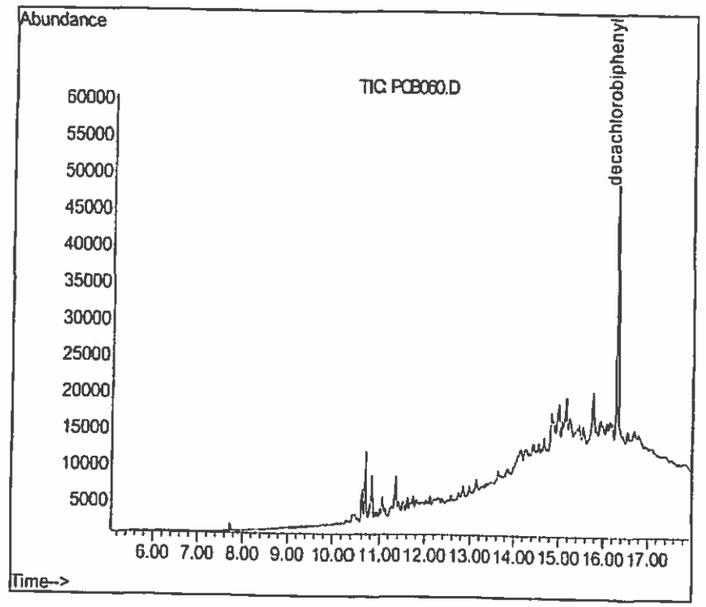


Date Extracted: 05/11/04
Checked by: Rosie Brown

EC7 PCB Congeners

Sample Identity - B04905-S0029 TP 14 1M
Client / Sample matrix - Irish Geotechnical Services Lt
Units - µg/kg

CAS Number	Compound	Concentration
7012-37-5	PCB congener 28	<1
35693-99-3	PCB congener 52	<1
37680-73-2	PCB congener 101	<1
31508-00-6	PCB congener 118	<1
35065-27-1	PCB congener 153	<1
35065-28-2	PCB congener 138	<1
35065-29-3	PCB congener 180	<1
	Total	<1

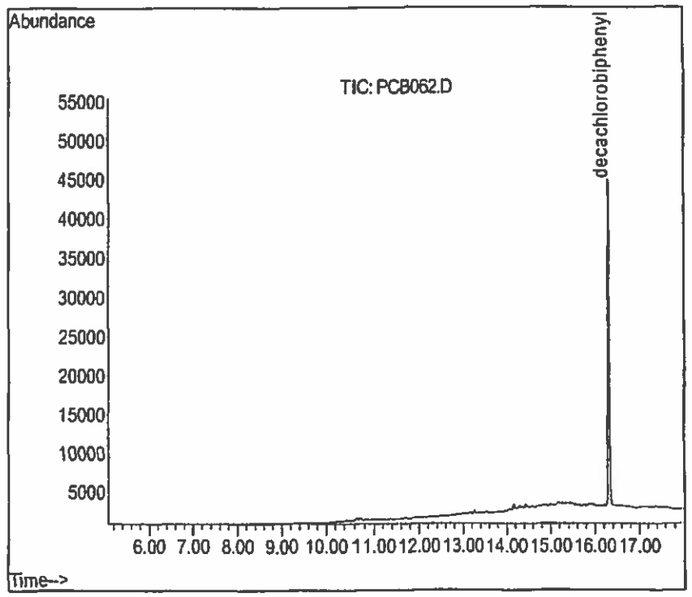


Date Extracted: 05/11/04
Checked by: Rosie Brown

EC7 PCB Congeners

Sample Identity - B04905-S0031 TP 11 0.5M
Client / Sample matrix - Irish Geotechnical Services Lt
Units - µg/kg

CAS Number	Compound	Concentration
7012-37-5	PCB congener 28	<1
35693-99-3	PCB congener 52	<1
37680-73-2	PCB congener 101	<1
31508-00-6	PCB congener 118	<1
35065-27-1	PCB congener 153	<1
35065-28-2	PCB congener 138	<1
35065-29-3	PCB congener 180	<1
	Total	<1

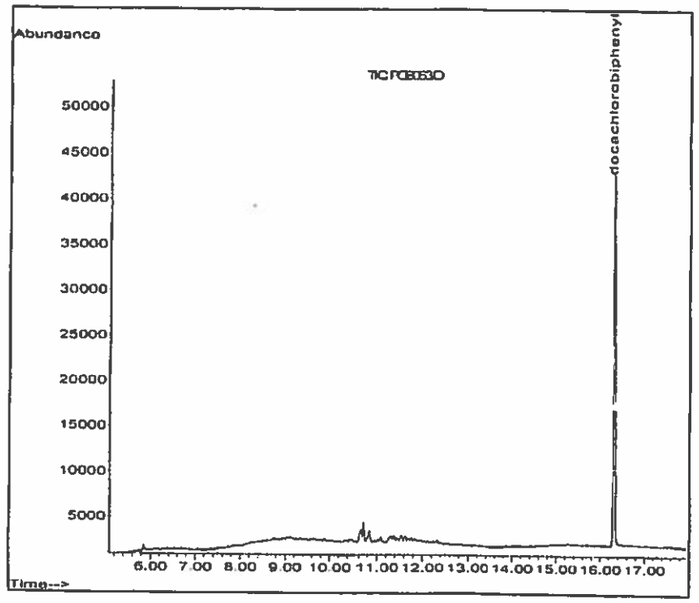


Date Extracted: 05/11/04
Checked by: Rosie Brown

EC7 PCB Congeners

Sample Identity - B04905-S0032 TP 3 1M
Client / Sample matrix - Irish Geotechnical Services Lt
Units - µg/kg

CAS Number	Compound	Concentration
7012-37-5	PCB congener 28	<1
35693-99-3	PCB congener 52	<1
37680-73-2	PCB congener 101	<1
31508-00-6	PCB congener 118	<1
35065-27-1	PCB congener 153	<1
35065-28-2	PCB congener 138	<1
35065-29-3	PCB congener 180	<1
	Total	<1

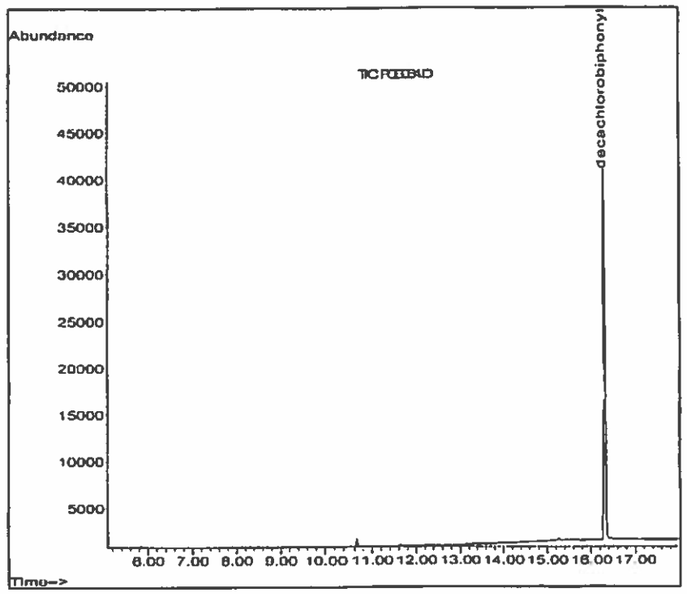


Date Extracted: 05/11/04
Checked by: Rosie Brown

EC7 PCB Congeners

Sample Identity - B04905-S0033 TP 4 1M
Client / Sample matrix - Irish Geotechnical Services Lt
Units - µg/kg

CAS Number	Compound	Concentration
7012-37-5	PCB congener 28	<1
35693-99-3	PCB congener 52	<1
37680-73-2	PCB congener 101	<1
31508-00-6	PCB congener 118	<1
35065-27-1	PCB congener 153	<1
35065-28-2	PCB congener 138	<1
35065-29-3	PCB congener 180	<1
	Total	<1

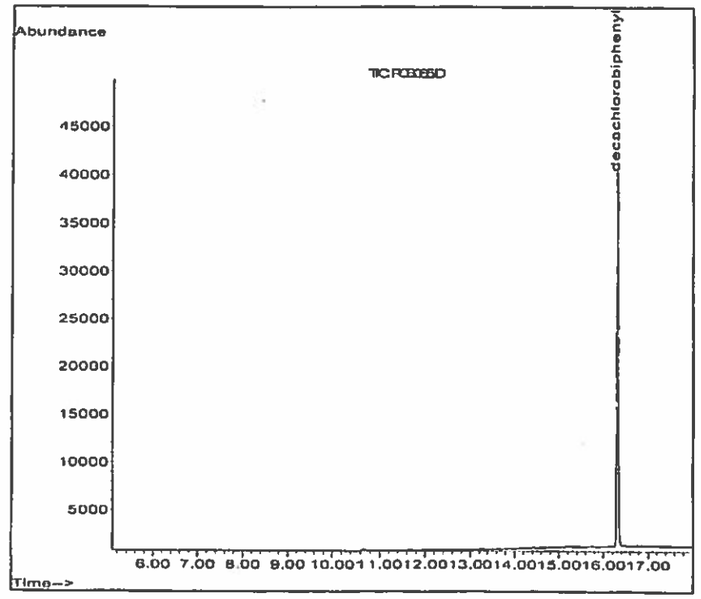


Date Extracted: 05/11/04
Checked by: Rosie Brown

EC7 PCB Congeners

Sample Identity - B04905-S0034 TP 14 2M
Client / Sample matrix - Irish Geotechnical Services Lt
Units - µg/kg

CAS Number	Compound	Concentration
7012-37-5	PCB congener 28	<1
35693-99-3	PCB congener 52	<1
37680-73-2	PCB congener 101	<1
31508-00-6	PCB congener 118	<1
35065-27-1	PCB congener 153	<1
35065-28-2	PCB congener 138	<1
35065-29-3	PCB congener 180	<1
	Total	<1

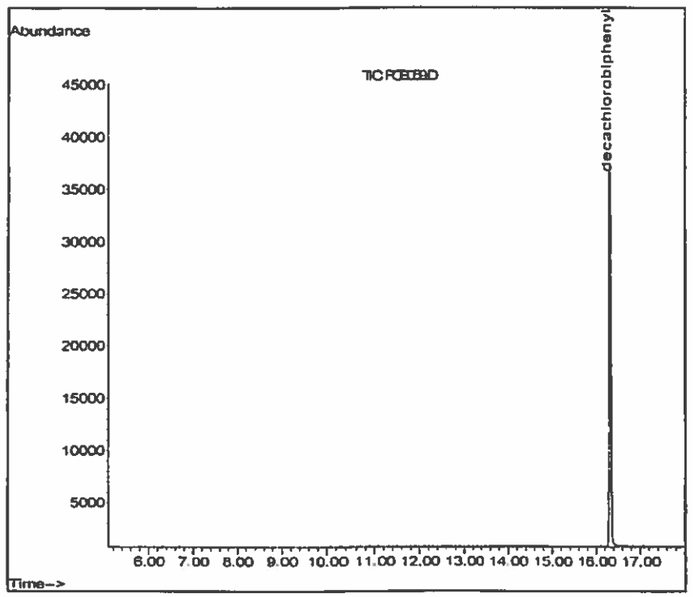


Date Extracted: 05/11/04
Checked by: Rosie Brown

EC7 PCB Congeners

Sample Identity - B04905-S0028 TP 7 1M
Client / Sample matrix - Irish Geotechnical Services Lt
Units - µg/kg

CAS Number	Compound	Concentration
7012-37-5	PCB congener 28	<1
35693-99-3	PCB congener 52	<1
37680-73-2	PCB congener 101	<1
31508-00-6	PCB congener 118	<1
35065-27-1	PCB congener 153	<1
35065-28-2	PCB congener 138	<1
35065-29-3	PCB congener 180	<1
	Total	**<1**



Date Extracted: 05/11/04
Checked by: Rosie Brown

APPENDIX

APPENDIX

1. Results are expressed as mg/kg dry weight (dried at 30°C) on all soil analyses except for the following: NRA Leach tests, flash point, and ammoniacal N_2 by the BRE method, VOC, PRO Cyanide and Acid Soluble Sulphide, SVOC, DRO, PAH,PCB, Speciated TPH, TPH by IR OFG's and SEM.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. A sub sample of all samples received will be retained free of charge for one months for soils and one month for waters (sample size permitting), but may then be discarded unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, an asbestos screen is done in-house on soils and if no fibres are found will be reported as NFD – no fibres detected. If asbestos is detected, then identification and quantification is carried out by ALcontrol Technichem. If a sample is suspected of containing asbestos, then drying and crushing will be suspended on that sample until the asbestos results is known. If asbestos is present, then no analysis requiring dry sample will be undertaken.

7. If no separate volatile sample is supplied be the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace is present in the volatile sample.

8. NDP – No determination possible due to insufficient/unsuitable sample.

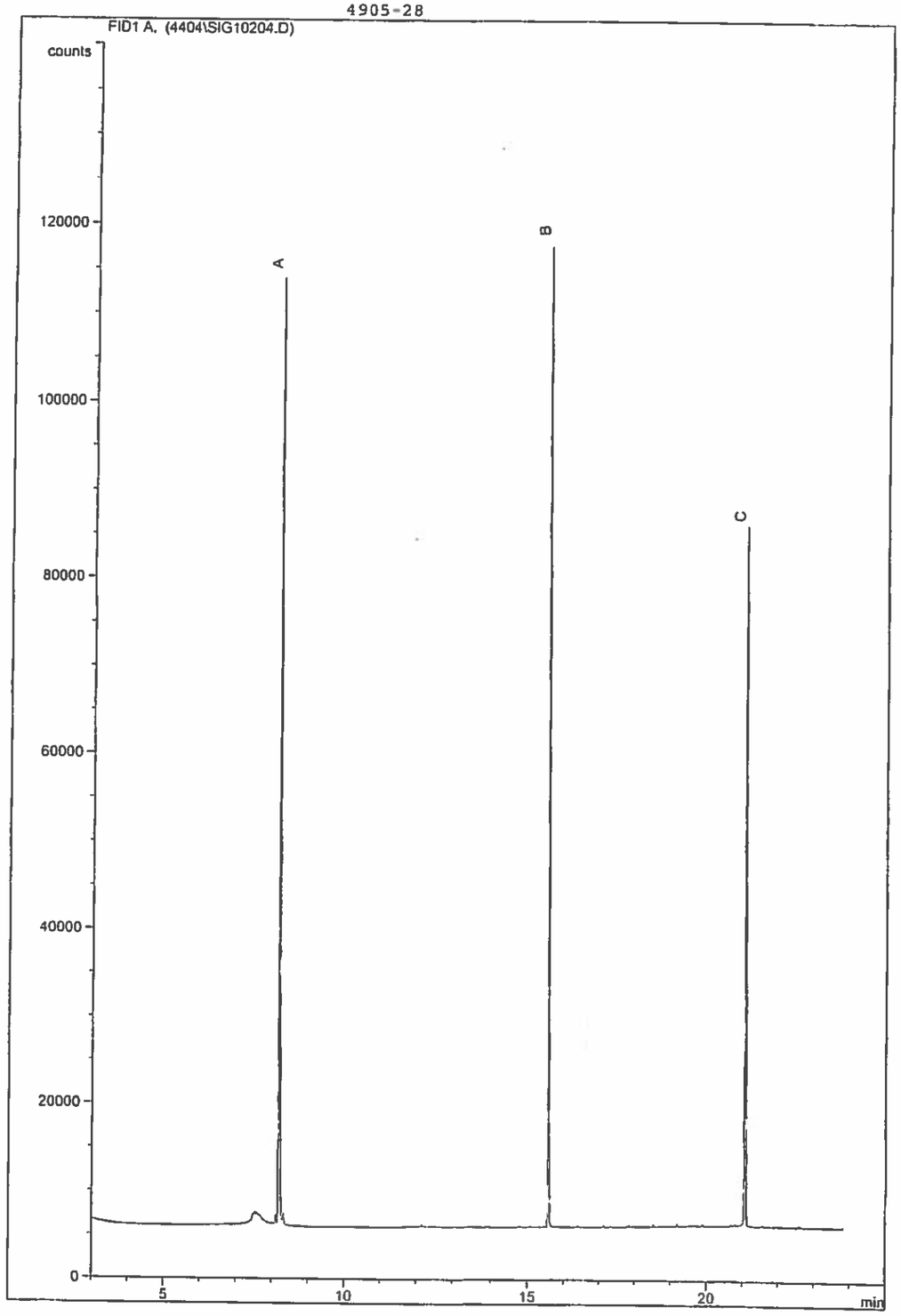
9. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.

10. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

Last updated January 2004

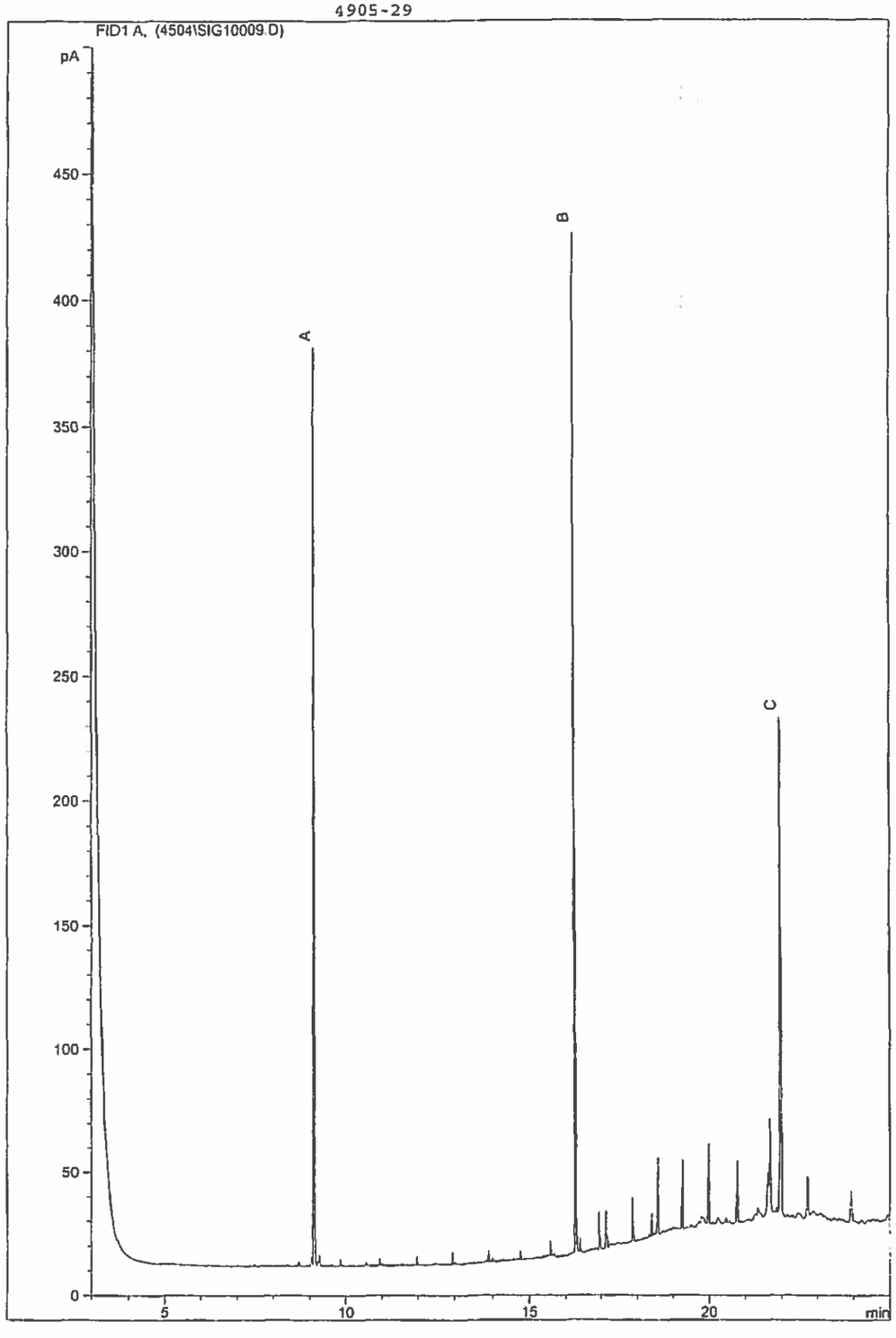
ALcontrol Laboratories Ireland
Diesel Range Organics Analysis
By G.C.

4905-28



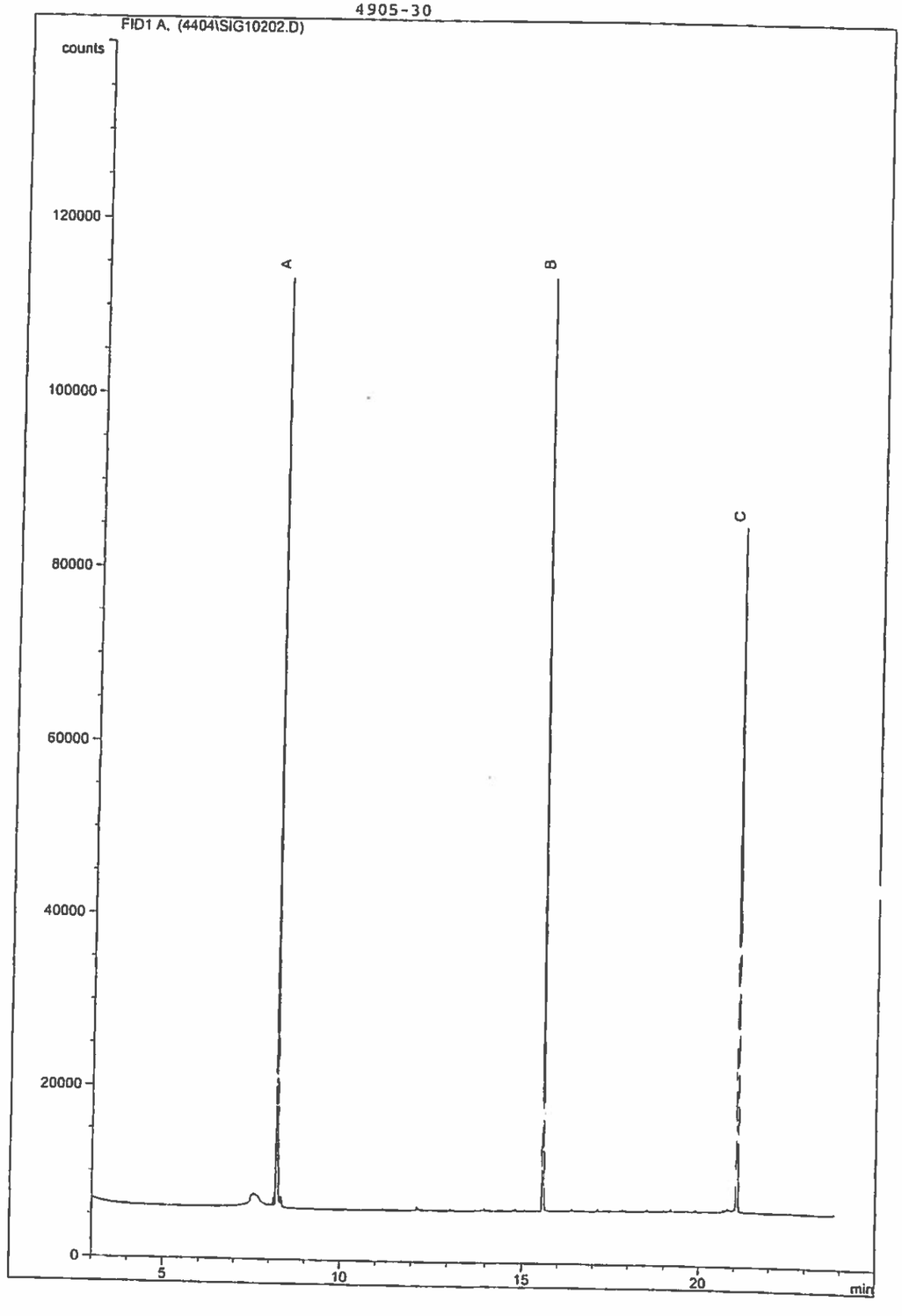
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Diesel Range Organics Analysis
By G.C.

4905-29



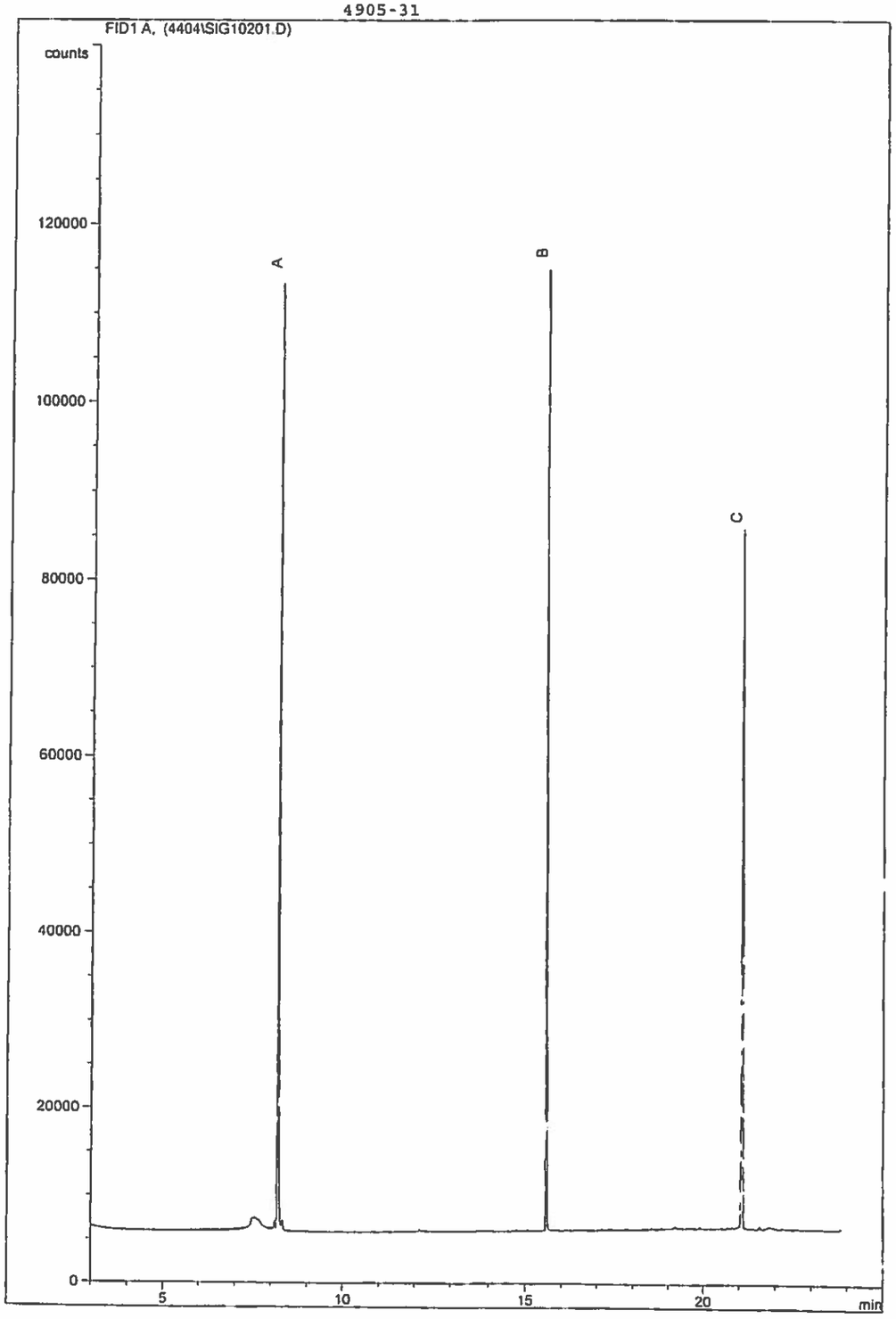
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Diesel Range Organics Analysis
By G.C.

4905-30



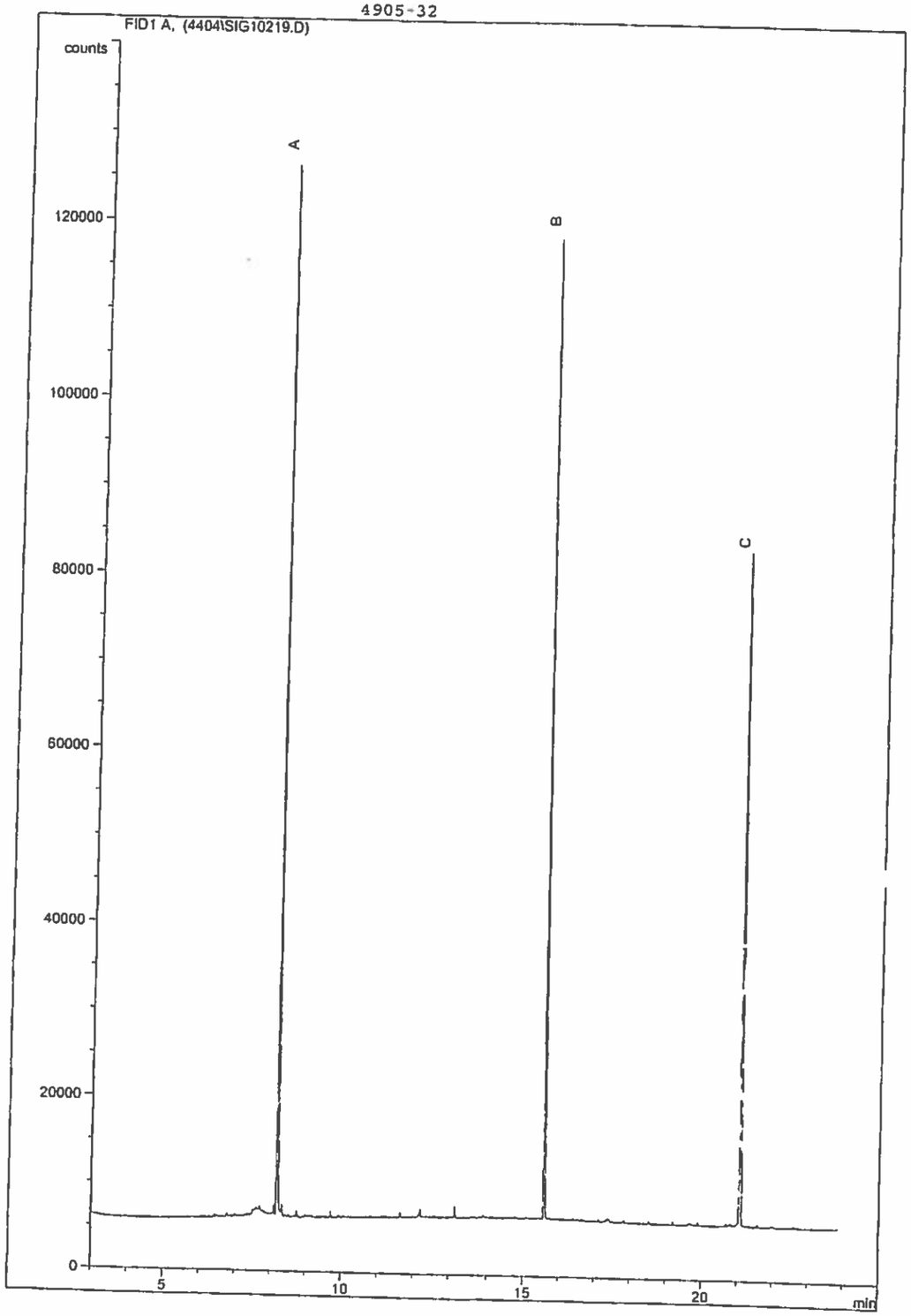
ALcontrol Laboratories Ireland
Diesel Range Organics Analysis
By G.C.

4905-31



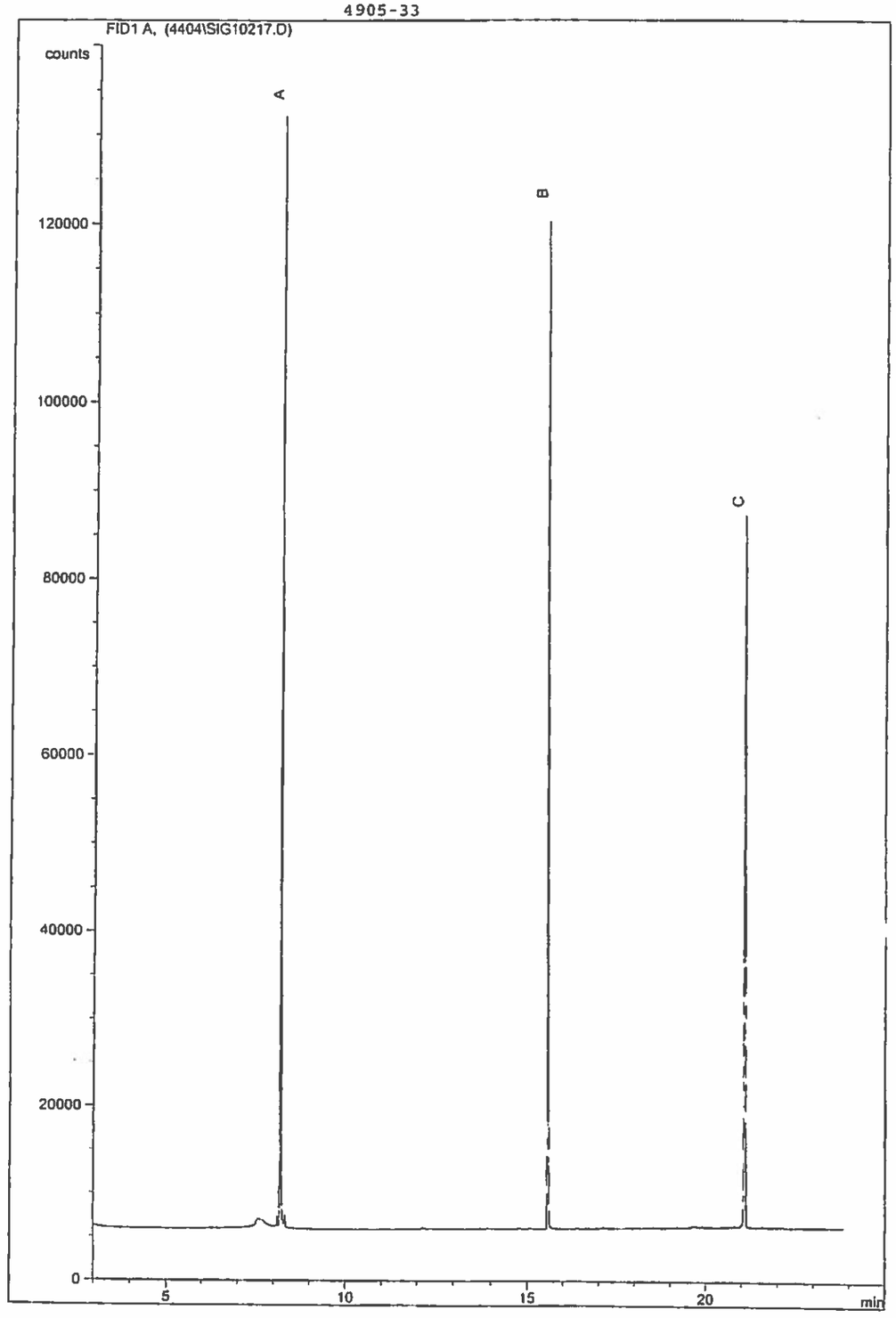
ALcontrol Laboratories Ireland
Diesel Range Organics Analysis
By G.C.

4905-32



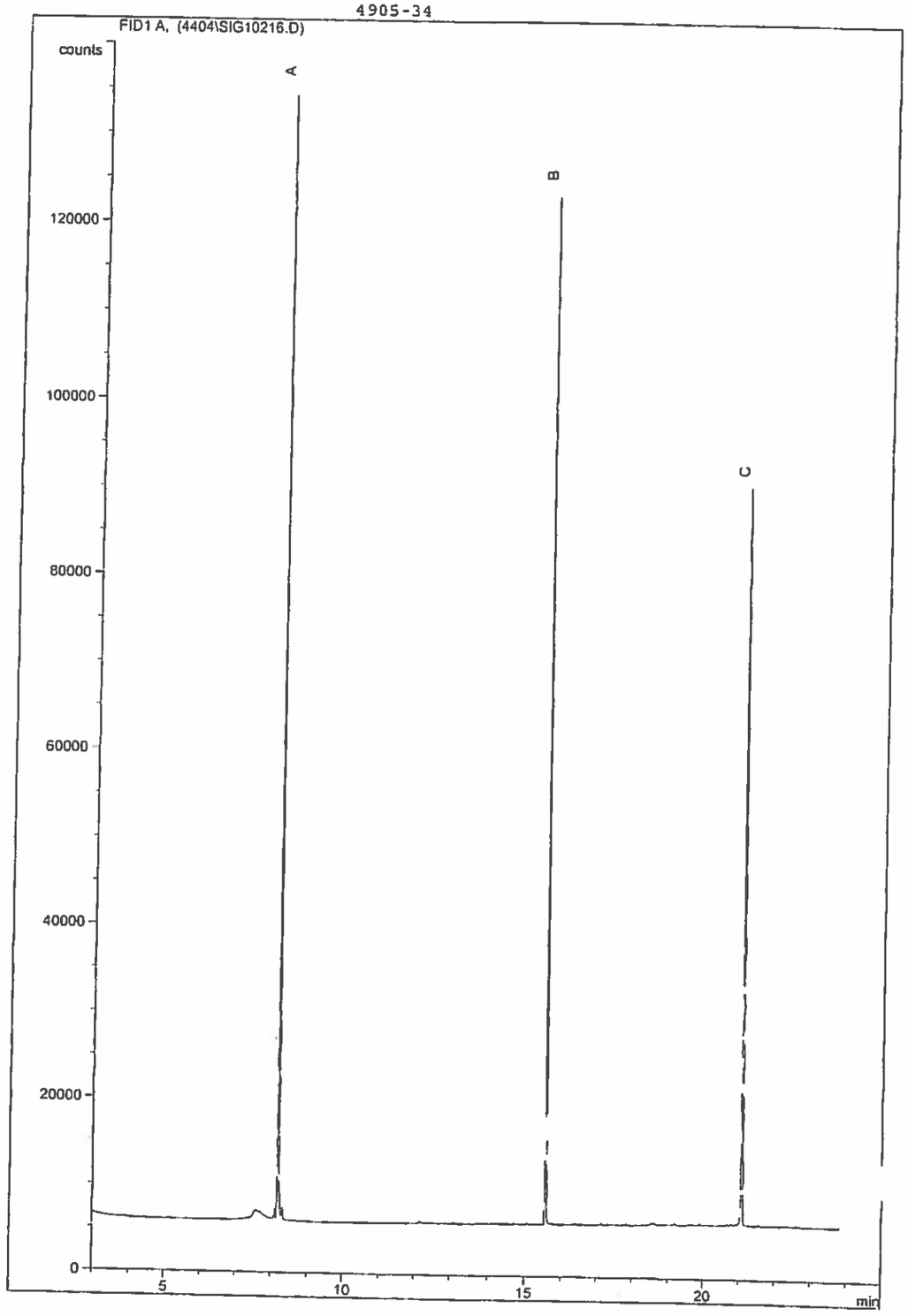
ALcontrol Laboratories Ireland
Diesel Range Organics Analysis
By G.C.

4905-33



ALcontrol Laboratories Ireland
Diesel Range Organics Analysis
By G.C.

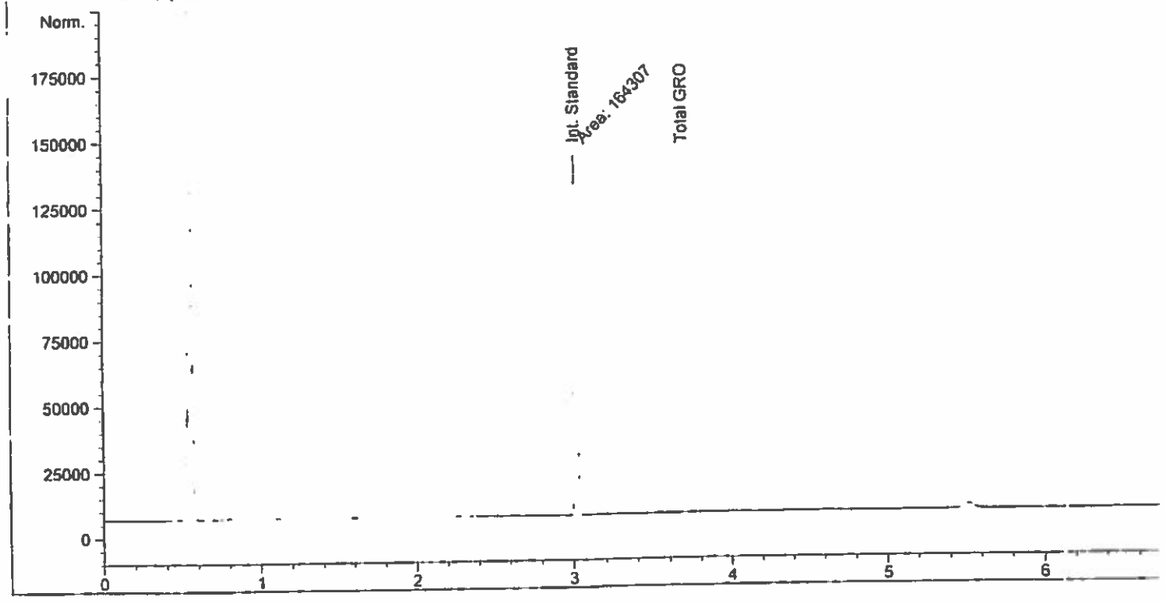
4905-34



Data File C:\HPCHEM\1\DATA\4604\SIG10035.D Sample Name: 4905-

Injection Date	: 11/9/2004 11:25:24 AM	Seq. Line	: 4
Sample Name	: 4905-28	Location	: Vial 4
Acq. Operator	: GER	Inj	: 1
Acq. Instrument	: Instrument 1	Inj Volume	: Manually
Acq. Method	: C:\HPCHEM\1\METHODS\GRO_MTBE.M		
Last changed	: 7/6/2004 3:03:41 PM by SINEAD		
Analysis Method	: C:\HPCHEM\1\METHODS\TOTALGRO.M		
Last changed	: 11/8/2004 5:00:43 PM by GER		

FID1 A, (4604\SIG10035.D)



External Standard Report

Sorted By	:	Signal	
Calib. Data Modified	:	Monday, November 08, 2004 4:59:51 PM	
Multiplier	:	1.0000	
Dilution	:	1.0000	
Sample Amount	:	1.00000 [ppb]	(not used in calc.)

Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppb]	Grp	Name
3.023	MM T+I	1.64307e5	1.76642e-1	2.90234e4		Int. Standard
3.707	MV R	4.01119e5	1.51942e-1	6.09467e4		Total GRO

Totals : 8.99701e4

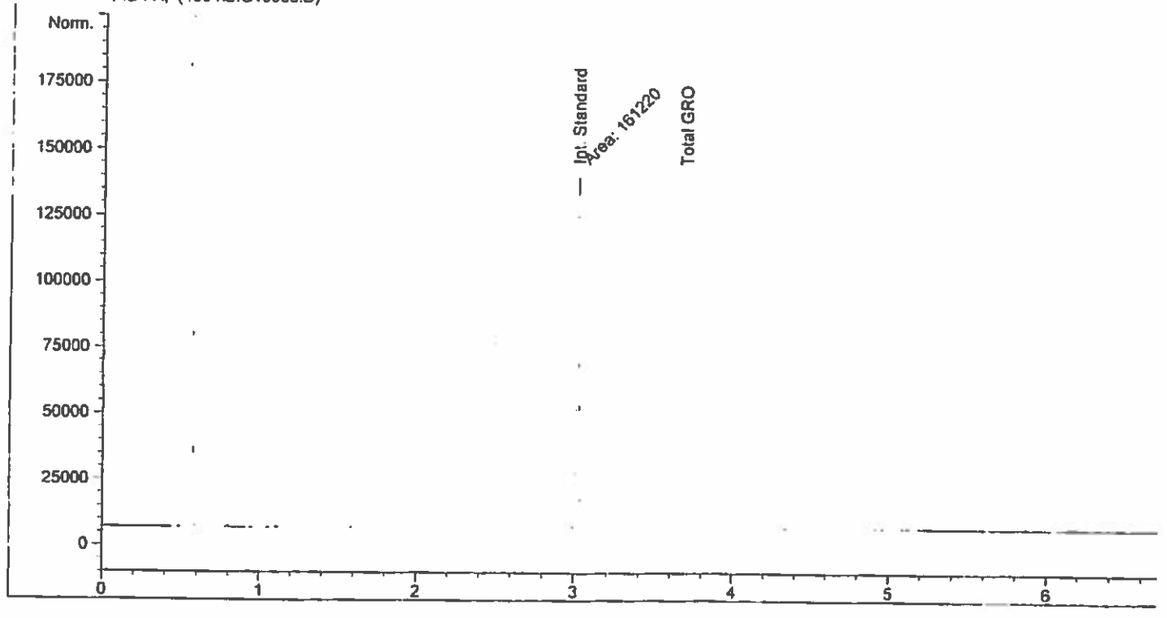
Results obtained with enhanced integrator!

*** End of Report ***

Data File C:\HPCHEM\1\DATA\4604\SIG10009.D Sample Name: 4905-

Injection Date	: 11/8/2004 7:18:43 PM	Seq. Line	: 9
Sample Name	: 4905-29	Location	: Vial 9
Acq. Operator	: GER	Inj	: 1
Acq. Instrument	: Instrument 1	Inj Volume	: Manually
Acq. Method	: C:\HPCHEM\1\METHODS\GRO_MTBE.M		
Last changed	: 7/6/2004 3:03:41 PM by SINEAD		
Analysis Method	: C:\HPCHEM\1\METHODS\TOTALGRO.M		
Last changed	: 11/8/2004 5:00:43 PM by GER		

FID1 A, (4604\SIG10009.D)



External Standard Report

Sorted By	:	Signal	
Calib. Data Modified	:	Monday, November 08, 2004 4:59:51 PM	
Multiplier	:	1.0000	
Dilution	:	1.0000	
Sample Amount	:	1.00000 [ppb]	(not used in calc.)

Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppb]	Grp	Name
3.023	MM T+I	1.61220e5	1.76642e-1	2.84782e4		Int. Standard
3.707	MV R	4.52191e5	1.51942e-1	6.87066e4		Total GRO

Totals : 9.71848e4

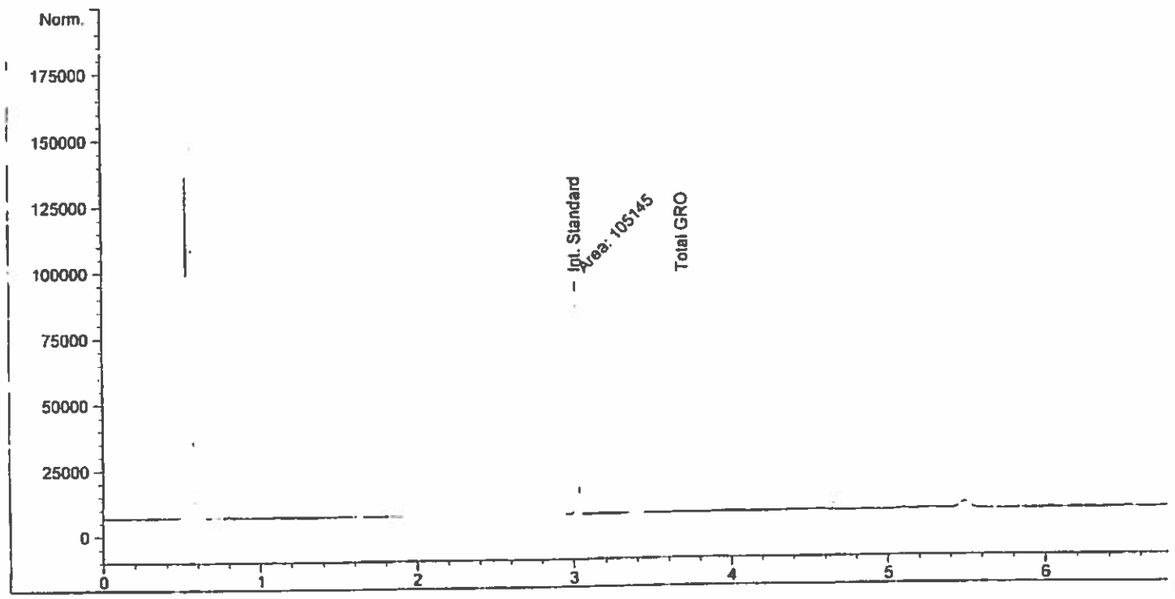
Results obtained with enhanced integrator!

*** End of Report ***

Data File C:\HPCHEM\1\DATA\4604\SIG10033.D

Injection Date	: 11/9/2004 10:59:47 AM	Seq. Line	: 2
Sample Name	: 4905-30	Location	: Vial 2
Acq. Operator	: GER	Inj	: 1
Acq. Instrument	: Instrument 1	Inj Volume	: Manually
Acq. Method	: C:\HPCHEM\1\METHODS\GRO_MTBE.M		
Last changed	: 7/6/2004 3:03:41 PM by SINEAD		
Analysis Method	: C:\HPCHEM\1\METHODS\TOTALGRO.M		
Last changed	: 11/8/2004 5:00:43 PM by GER		

FID1 A, (4604\SIG10033.D)



External Standard Report

Sorted By	:	Signal
Calib. Data Modified	:	Monday, November 08, 2004 4:59:51 PM
Multiplier	:	1.0000
Dilution	:	1.0000
Sample Amount	:	1.00000 [ppb] (not used in calc.)

Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppb]	Grp	Name
3.023	MM T+I	1.05145e5	1.76642e-1	1.85730e4		Int. Standard
3.707	MV R	2.00511e5	1.51942e-1	3.04660e4		Total GRO
Totals :				4.90390e4		

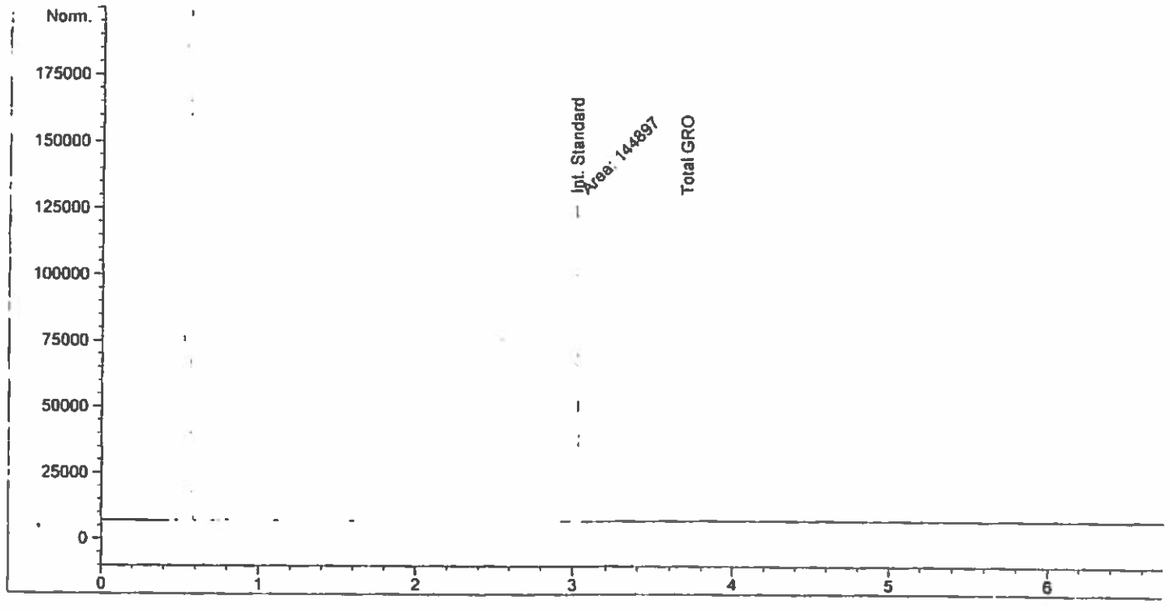
Results obtained with enhanced integrator!

*** End of Report ***

Data File C:\HPCHEM\1\DATA\4604\SIG10025.D

Injection Date	: 11/8/2004 10:43:32 PM	Seq. Line	: 25
Sample Name	: 4905-31	Location	: Vial 25
Acq. Operator	: GER	Inj	: 1
Acq. Instrument	: Instrument 1	Inj Volume	: Manually
Acq. Method	: C:\HPCHEM\1\METHODS\GRO_MTBE.M		
Last changed	: 7/6/2004 3:03:41 PM by SINEAD		
Analysis Method	: C:\HPCHEM\1\METHODS\TOTALGRO.M		
Last changed	: 11/8/2004 5:00:43 PM by GER		

FID1 A, (4604\SIG10025.D)



External Standard Report

Sorted By	:	Signal
Calib. Data Modified	:	Monday, November 08, 2004 4:59:51 PM
Multiplier	:	1.0000
Dilution	:	1.0000
Sample Amount	:	1.00000 [ppb] (not used in calc.)

Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppb]	Grp	Name
3.024	MM T+I	1.44897e5	1.76642e-1	2.55949e4		Int. Standard
3.712	MB R	3.93812e5	1.51942e-1	5.98365e4		Total GRO
Totals :				8.54313e4		

Results obtained with enhanced integrator!

*** End of Report ***

Sample Name: 4905

1
Vial 1
1
Manually

51 PM

calc.)

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5 6

Page 1 of

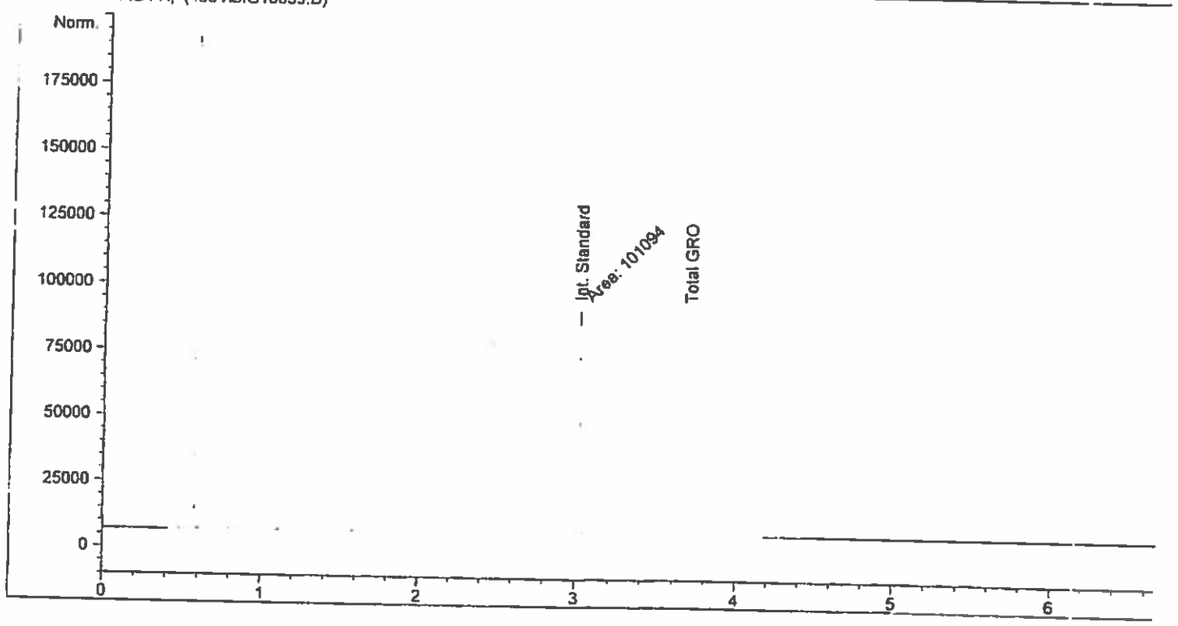
Data File C:\HPCHEM\1\DATA\4604\SIG10039.D

Sample Name: 490:

Injection Date : 11/9/2004 2:25:11 PM
Sample Name : 4905-33
Acq. Operator : GER
Acq. Instrument : Instrument 1
Acq. Method : C:\HPCHEM\1\METHODS\GRO_MTBE.M
Last changed : 7/6/2004 3:03:41 PM by SINEAD
Analysis Method : C:\HPCHEM\1\METHODS\TOTALGRO.M
Last changed : 11/8/2004 5:00:43 PM by GER

Seq. Line : 2
Location : Vial 2
Inj : 1
Inj Volume : Manually

FID1 A, (4604\SIG10039.D)



External Standard Report

Sorted By : Signal
Calib. Data Modified : Monday, November 08, 2004 4:59:51 PM
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 1.00000 [ppb] (not used in calc.)
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppb]	Grp	Name
3.023	MM T+I	1.01094e5	1.76642e-1	1.78574e4		Int. Standard
3.707	MV R	2.64443e5	1.51942e-1	4.01800e4		Total GRO
Totals :				5.80374e4		

Results obtained with enhanced integrator!

*** End of Report ***

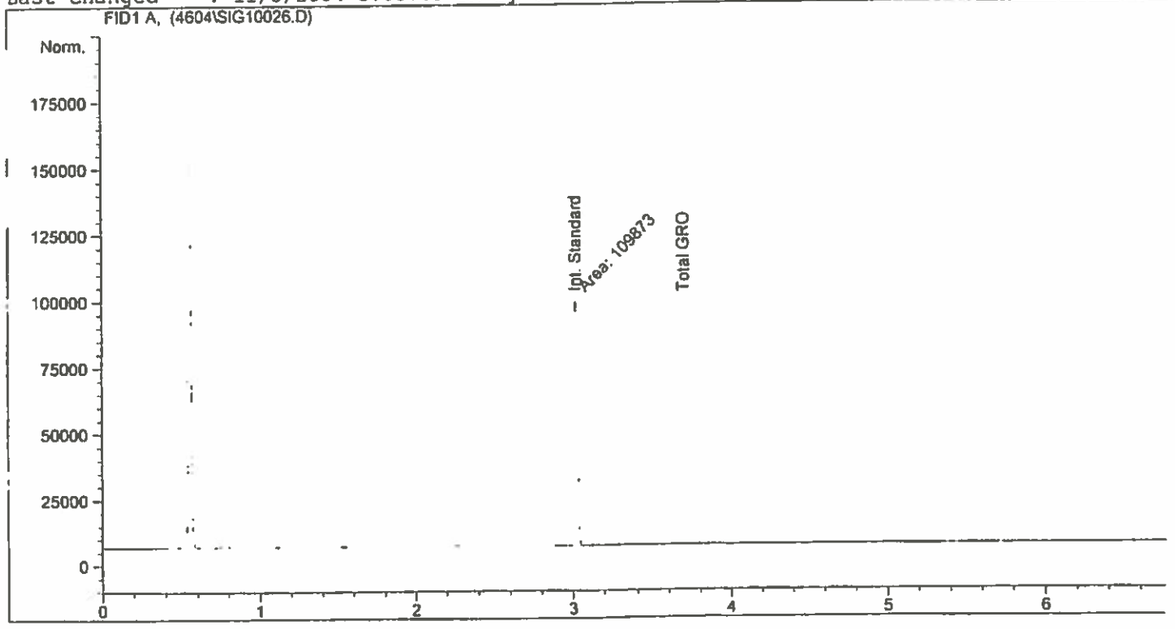
Instrument 1 11/9/2004 2:41:20 PM GER

Page 1 of

Data File C:\HPCHEM\1\DATA\4604\SIG10026.D

Injection Date : 11/8/2004 10:56:19 PM
Sample Name : 4905-34
Acq. Operator : GER
Acq. Instrument : Instrument 1
Acq. Method : C:\HPCHEM\1\METHODS\GRO_MTBE.M
Last changed : 7/6/2004 3:03:41 PM by SINEAD
Analysis Method : C:\HPCHEM\1\METHODS\TOTALGRO.M
Last changed : 11/8/2004 5:00:43 PM by GER

Seq. Line : 26
Location : Vial 26
Inj : 1
Inj Volume : Manually



External Standard Report

Sorted By : Signal
Calib. Data Modified : Monday, November 08, 2004 4:59:51 PM
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 1.00000 [ppb] (not used in calc.)
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppb]	Grp	Name
3.024	MM T+I	1.09873e5	1.76642e-1	1.94081e4		Int. Standard
3.707	MV R	2.94575e5	1.51942e-1	4.47582e4		Total GRO
Totals :				6.41663e4		

Results obtained with enhanced integrator!

*** End of Report ***

