

CONTENTS PAGE

Client:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

- ☒ 1 QUOTATION
- ☒ 2 CUSTOMER ORDER
- ☒ 3 MACHINE SPECIFICATION DOCUMENT_S027_v11
- ☒ 4 LOG SHEET_S028_v3
- ☒ 5 FAULT REPORTING DOCUMENT_S029_v3
- ☒ 6 TEST ACCEPTANCE SPECIFICATION_S030_v9
- ☒ 7 ASSEMBLY AND TEST RECORD_S023_v5
- ☒ 8 SERIAL NUMBER FORM_S053_v4
- ☒ 9 TEST DATA
- ☐ 10 PACKING LIST_S035b_v6
- ☒ 11 INSTALLATION REPORT_S057_v6
- ☒ 12 INSTALLATION ACCEPTANCE AND WARRANTY CERTIFICATE_S071_v3

ADDITIONAL:

Payment Terms:

50% / 40% / 10%

Other: please specify

Penalty Clause Yes / No

Please specify: _____

Blue Book Completion:

Signed	<i>D. O'Connor</i>	Date	08/05/25
Verified	<i>S. Macs</i>	Date	08/05/25

Quotation

To: NERC - Natural Environment Research Council
 C/O UK Shared Business Services Ltd
 Polaris House
 North Star Avenue
 Swindon
 SN2 1UH
 VAT No. 287461957

Quotation Date: 26/10/2023
Quotation Reference: 17667
Customer Ref: BGS
Account Ref: NAT004
Quotation Validity: 15/02/2024

Quantity	Product Code	Product Description	Unit Price £	Discount £	Net Price £
IRMS for Water analysis					
HS2022 IRMS					
1	20402/3	HS2022 + Hd Collector + E-Mag (IN1313 STOCK) Continuous flow isotope ratio mass spectrometer. Including high sensitivity source, electro magnet and HD collector. System configured for m/z 2 to 66 for the analysis of H ₂ , CO ₂ , N ₂ , N ₂ O, NO, O ₂ , SO, SO ₂ , CO and CH ₄ (converted to CO ₂). Windows based data system. 70201-1 - Analyser spares kit includes a filament, copper gaskets, source tool kit, pump oil, snoop and ferrules	86,800.000	0.00	86,800.00
HT-EA for Pyrolysis					
1	11501/6	HT-EA Stand alone For high temperature pyrolysis for H & O. Includes solid autosampler. Additional autosampler required for liquid injections. 70801-1 - Pyrolysis start up kit high temp for solids. 71501-1 - HT-EA Pyrolysis start up kit O and H (Used In Build)	13,400.000	0.00	13,400.00
1	CON001	Automatic Liquid Sampler 121 positions Configured: RIGHT Model 3000A asked for figure LEFT	8,500.000	0.00	8,500.00
1	SI2744	Mounting Plate & Accessories - ordered	340.000	0.00	340.00
1	WARR2	2 year warranty	0.000	0.00	0.00
1	DEL	Delivery to Keyworth	500.000	0.00	500.00
1	INST	Installation and start up training at Customer's site	3,490.000	0.00	3,490.00
1	WARR	1 year warranty for third year	9,000.000	0.00	9,000.00
Options					
1	71501-8	HT-EA Pyrolysis Kit for Water injections (approx. 1 year kit)	3,726.000	0.00	3,726.00
1	WARR2	extension of warranty to 60 months	20,000.000	0.00	20,000.00

This quotation is issued in Pound Sterling

Total Net Amount £ 145,756.00

Total VAT Amount £ 29151.20

Order Total £ 174,907.20

* The price quoted does not include any local taxes or duties
 See separate document for terms and conditions

Payment Details:-

50% with order, 40% on delivery and 10% installation
 Payment is required within 30 DAYS of invoice date by bank transfer.
 All bank transfer charges are the responsibility of the customer.

Sercon Bank Details:-

National Westminster Bank, 36 High Street,
 Nantwich, Cheshire CW5 5GA U.K.

Sterling: IBAN: GB74NWBK54101736755133
 Euro: IBAN: GB14NWBK60721013806831
 US Dollar: IBAN: GB94NWBK60730113806556
 BIC: NWBKGB2LXXX



**UK Research
and Innovation**

Sercon Ltd
Unit 3b Crewe Trade Park
Gateway
Crewe
Cheshire
CW1 6JT

Tender Ref: UKRI-3456
FTS Notice Ref: 2023/S 000-030344

22 November 2023

Dear Garry Armstrong

This is an award decision notice pursuant to the Public Contracts Regulations 2015 (as amended).

Thank you for submitting a tender for **UKRI-3456 Isotope Ratio Mass Spectrometer System For Measuring The Hydrogen Isotope Composition ($\delta^2\text{H}$) of Water Samples**. The evaluation process has now been completed and I am pleased to inform you that your tender was Successful.

Your tender passed all mandatory criteria.

The evaluation criteria for this requirement, as indicated in the Invitation To Tender, is listed below, along with the scores you were awarded:

Criteria	Sub-criteria (if applicable)	Weighting (%)	Your Score
Price	(Q5.1) Price	40.00%	40.00
Technical/Quality	(Q6.2) Proposed System	30.00%	24.00
Technical/Quality	(Q6.3) System Control	5.00%	3.00
Technical/Quality	(Q6.4) Aftercare & Maintenance	10%	8.00
Technical/Quality	(Q6.5) Installation & Sustainability	5.00%	4.00
Technical/Quality	(Q6.6) Social Value	10.00%	8.00
		100.00%	87.00

Our evaluation resulted in your bid receiving a score of **87.00**.

The Contract Price is **£119,530**.

Please note that in addition to the contract price above we wish to purchase the following optional extras:

- Spares and consumables kit (in addition to that used during setup): £3,726.00
- Extension of warranty to 60 months: £20,000.00
- 121 position option: £2,500

Total Price: £145,756.00 (excluding VAT)



**UK Research
and Innovation**

At this stage, you have been identified as the Preferred Bidder for this requirement. This letter is not communication of formal acceptance of your offer. In accordance with Regulation 87 of the Public Contracts Regulations 2015 (as amended) UKRI will observe a standstill period between the dispatch of this letter and entering into any contract. The standstill period will start on **22 November 2023** and conclude at midnight on **04 December 2023**, which is not less than 10 calendar days after this standstill period start date (i.e. counting the day after the sending as day one), ending on a working day, as this notice is being sent by electronic means. UKRI will not enter into a contractual agreement before the expiration of this period.

Prior to the end of the standstill period, you are required to provide the certificates and documentary evidence referred to in the tender, specifically:

- A copy of your audited accounts for the last two years
- Insurances Certificates
- Health and Safety Policy

Finally, may we take this opportunity to thank you once again for the interest you have shown in supplying United Kingdom Research and Innovation (UKRI).

Yours sincerely

A handwritten signature in black ink, appearing to read 'K Richardson', written in a cursive style.

Kate Richardson
Commercial Business Partner
UKRI

3 - MACHINE SPECIFICATION

Client:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

Ref No.	Product Description	Required
HS2022 (continuous flow)		
20402/1	HS2022 Ref Gas + P Mag	
20402/2	HS2022 Ref Gas + E-Mag	
20402/3	HS2022 Ref Gas + Hd Collector + E-Mag	Y
20402/4	HS2022 Ref Gas + Hd Collector+E-Mag+Trap Loop	
20501	Hd Collector Assy	***
50101/2	Trapping Loop Assy	
70201-1	70201-1 Analyser spares kit – Included	Y
EA Units		
10202/11	iso-EArth	
10202/13	iso-EArth+	
10202/14	iso-Earth HT Furnace Upgrade	
10202/15	Iso-Earth (Without Autosampler)	
11802/1	Earth+PC	
11802/2	EArth+Clarity+PC	
70501-1	Consumables for C and N for Combustion Only	
70501-11	Simultaneous CNS Consumables Kit (approx. 10000 analysis)	
70501-3	Sample Prep Kit (Inc.)	
70501-4	GSL Combustion and Gas C & N Start Up Kit	
70501-5	Simultaneous NCS Consumables Kit	
70501-6	C&N Combustion Only Consumables Kit (approx. 5000 samples)	
70501-8	Simultaneous CNS Consumables Kit (approx. 5000 samples)	
70601-1	Sulphur Start Up Kit (Inc. with Sercon EA Systems)	
70601-2	Sulphur Consumables Kit for 1000 Samples	
70601-4	Sulphur Consumables Kit (approx. 5000 Samples)	
70801-2	Pyrolysis Consumables Kit-Low temp for Solids	
71701-1	Sub Microgram Nitrogen Analysis Start Up Kit	
SI2040	PN150 Pneumatic Autosampler with one no.50 pos, carousel	
SI2345	ME Micro Balance	
SI2737/A	Sercon 50 Position Autosampler Assy	
SI2789	Extra 50 Position Carousel	
	Automatic Liquid Sampler 121 Position Model 3000A	Y
SI2743	Liquid Sampler Mounting Plate	Y
Headspace Equilibration		
10202/10	XYZ Gas Sampling Control Box	
10302/1	Aqua System	
11103	µCarbs for CF	
11103-1	µCarbs for DI	
11601	200 Place Dual Heated Block 240 Volt	
11801	Sercon XYZ Gas Autosampler	
71107-1	CF oxygen-18 equilibration kit	
71107-2	DI Oxygen-18 Equilibration kit	
71201-1	CF deuterium equilibration kit	
71201-2	DI Deuterium Equilibration kit	
71801-1	WES-DI start up kit (Inc. with WES-DI)	
GC Units		
10402/2	Orchid module 1500C (Will run Hd 70901-1 C Spares Kit Inc)	
10901	Nitrogen Option (71301-1 N Spares kit Included)	
HP7890/1	Agilent 7890B GC System	
HP7890/2	Agilent 7890B GC with Auto Injector	
HP7890/3	Agilent 7890B GC + Auto Injector + 150 Vial Sample Tray	
SI2561	Nexis GC 2010 Plus	

3 - MACHINE SPECIFICATION

Client:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

Ref No.	Product Description	Required
GC Units <i>continued</i>		
SI2564	Nexis GC-2030	
70901-3	GC Pyrolysis H and O Start Up Kit	
70901-4	GC Pyrolysis H Spares Kit	
70901-5	GC Combustion C Spares Kit (approx. 5000 samples)	
70901-6	GC Pyrolysis h Start Up Kit (approx. 5000 samples)	
71301-1	GC N Spares kit	
ABCA2 Units		
10502/1	ABCA2 Sercon XYZ Autosampler	
10602	ABCA2 Gas Box	
20602	Complete Sercon ABCA2 system	
20603	ABCA IR Analyser	
70101-1	ABCA2 spares kit (<i>Inc. With ABCA2</i>)	
70101-2	ABCA2 Spares Kit for AB Analitica Systems	
70101-3	ABCA2 Autosampler Upgrade Kit	
SI1767	CVL505 – Barcode Reader	
SC9973	13C Urea breath test kit for Helicobacter pylori infection	
SC9974	Helicobacter Test kit for children age 3-11 (45mg)	
Integra2 Units		
20802/4	Integra2	
70201-2	Integra2 analyser spares kit - Included	
70401-1	Integra-2 consumables (<i>Inc. With Integra2</i>)	
Trace Gas Systems		
10802/4	CryoPrep	
10802/5	Automated LN refiller	
10802/6	CryoFlex (TOC)	
10802/7	CryoGas	
10802/8	CryoFlex (LA)	
SI2533	Silicon Carbide Vertical Furnace	
SI2731	213nm Laser Ablation System	
SI2733	isoScell 100 sampler chamber	
71001-1	Cryoprep Spares Kit	
71001-5	CryoGas Consumables Kit	
TOC Units		
14001	Thermalox Environmental TOC-IRMS	
14002	Thermalox Environmental TOC-Standalone	
14003	Thermalox Environmental TOC-Standalone No Sampler	
SI2772	CO2 Detector, High sensitivity Option	
SI2773	NOx detector Option	
SI2774	Vacuum pump Option	
SI2775	Stirred Vial rack Option	
72101-1	TOC Start Up Kit	
72101-2	TOC Chem Pack	
72101-3	TOC & TN Instrument with heavy usage - one year	
72101-4	TOC only - economy holding	
GEO 20-22 (dual inlet)		
10702	GEO 20-22 Water Equilibration System (D & 18O)	
21802/1	GEO 20-22	
21802/2	GEO 20-22 + E-Mag	

3 - MACHINE SPECIFICATION

Client:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

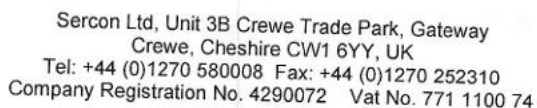
21802/3	GEO 20-22 + E-Mag +Hd	
21802/4	GEO 20-22 Inlet	
70301-1	GEO start up kit - Included	
70301-3E	Comprehensive GEO 20-22 spares kit for 5 years operation	
HT-EA		
11501/4	HT-EA (With Autosampler)	
11501/5	HT-EA With Liquid Option	
11501/6	HT-EA Stand Alone	Y
11501/7	HT-EA (Without Autosampler)	
SI2622	CTC PAL3-LSI-L-S	
SI2624	CTC PAL3-Kit-Standalone	
70801-1	Pyrolysis Consumables Kit-High Temp for Solids	Y
71501-1	HT-EA Pyrolysis Start Up kit O and H	Y
71501-2	HT-EA Pyrolysis Kit for Water injections	
71501-3	HT-EA Sensitivity Start Up Kit for O & H in small samples	
71501-4	HT-EA Sensitivity Consumables Kit for O & H in small samples	
71501-5	HT-EA Sensitivity Kit for O&H in Small Samples (5000 samples)	
71501-7	HT-EA Kit for Room Temp Equilibration	
71501-8	HT-EA Pyrolysis Kit for Water injections (approx. 1 year kit)	Y

Ref No.	Product Description	Required
Upgrades		
12101	Evacuation System ***	
12102	2 Ref Gas+ Dilutor Box ***	
20101	Standard Source Assy ***	
20102	HS Source Assy ***	
20301	Standard Collector Assy ***	
30202/1	System Control Upgrade (Pmag) installation not included	Edwards Or Pfeiffer
30202/2	System Controller Upgrade (Emag) installation not included	Edwards Or Pfeiffer
10202/7	Preparation PCB Upgrade	
30202/3	Hijack Box ***	
30302/4	nEXT85 Edwards Pumping System Upgrade Single - installation not included	
30302/5	nEXT85 Edwards Pumping System Upgrade Dual - installation not included	
30302/6	nEXT85 Edwards Pumping System Upgrade Triple- installation not included	
SI2542	ABCA2 Upgrade Kit	
CALLISTOW	Callisto software upgrade ***	
Specials		
11702	LC-I interface	
12202	Leco Interface Unit	
SI2320	Agilent 1260 Series Refractive Index Detection HPLC System	
71401-1	ABCA-G Start Up/Spares Kit	
71401-2	ABCA-G Equilibration Spares Kit - Room temp O only	
71401-3	ABCA-G Equilibration Spares Kit - Room Temp O & H	
71601-1	LC Interface Spares Kit	
ADDITIONS		
PC	Windows 7 based PC System with Callisto Software	Y
Printer	Printer	
INST1	Installation and start up training at customer's site by Sercon Engineer	Y
INST2	Installation and start up training at customer's site by Agents Engineer	
WARR	1 year warranty	
WARR3	3 year warranty	Y
TRAIN	Training in UK for one person for 3 days	
SCONTRACT	Maintenance Service Contract – 1 year	

3 - MACHINE SPECIFICATION

Client:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

SPECIFICATION REQUIREMENTS		
Voltage	230 Volts 50/60Hzs	Y
Plug Type	SI2510 3 Metre USA/Japan plug to IEC C 13	
	SI2511 2.5 Metre Australian plug to IEC C 13	
	SI2512 3 Metre UK 13 amp Fused plug to IEC C 13	Y
	SI2523 3metre Schuko (Euro) Plug to IEC C13 Socket	
	SI2514 2.5 metre Chinese mains to IEC C13	
Pallet	Stamped for export heat treated for 30 min @ 56 °C	Y
	Complies with all Export Requirements	



Date	Action Taken	By Whom
8/7/24	Set purge and flows on instrument Checked furnaces would drive to temperature - prep board switched from K type to R type Thermocouple wires on terminal block wrong way around physically as they are wired backwards on thermocouple	AD
9/7/24	Set up test PC with liquid sampler software	AD
10/7/24	Sorted up liquid injector, calibrated positions and checked movement Checked communications with PC monitor - OK Checked injector runs with Colista method sequence - OK	AD
11/7/24	Made backup USB's with software and prepped for shipping	AD

Client:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

[illegible]

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

HT-EA			
Pyrolysis (n=5)			
¹⁸ O	100 µg O or 1 µl water	0.3	
² H	200 µg H or 1 µl water	1.0	

Aqua, µCarbs & GasBox					
Equilibrations (n=5)					
¹⁸ O	0.2 ml water	0.1			
² H	0.2 ml water	2.0			
Carbonates (n=5)					
¹³ C	100 µg CaCO ₃	0.08			
¹⁸ O	100 µg CaCO ₃	0.1			
Gas Analysis (n=5)					
¹³ C	5% CO ₂	0.1		Air CO ₂	0.1
¹⁸ O	5% CO ₂	0.1		Air CO ₂	0.2
² H	0.5 ml H ₂	1.5			
¹⁵ N	0.5 ml N ₂	0.1		100 ppm N ₂ O	0.5
¹³ C	Breath (12 ml)	0.1			
DIC (n=5)					
¹³ C	15ppm (0.5ml)	0.15			

LC-I			
(n=5)			
¹³ C		0.2	

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

GC Orchid						
Combustion (n=3 for each analyte)						
¹³ C	3 Alkanes	100 ng C	0.2		10 ng C	0.5
¹⁵ N	2 Amines	100 ng N	0.5		14 ng N	1.5
Pyrolysis (n=3 for each analyte)						
² H	3 Alkanes	250 ng H	3.0		25 ng H	10.0
¹⁸ O	3 FAMES	100 ng O	0.5		20 ng O	2.0
Water pyrolysis (n=5)						
² H	0.1 µl water	3.0				
¹⁸ O	0.1 µl water	0.4				

CryoRange						
(n=5)						
¹³ C	Air CO ₂ (12ml)	0.1		Air CH ₄ (125ml)	0.2	
¹⁵ N	Air N ₂ (1ml)	0.1		Air N ₂ O (125ml)	0.4	
¹⁸ O	Air CO ₂ (12ml)	0.15		Air N ₂ O (125ml)	0.7	
¹⁸ O	Air O ₂ (1ml)	0.1				
² H	Air CH ₄	3.0				
¹³ C	TOC (5ppm)	0.4				
¹³ C	Laser					

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

Geo2			
Internal precision (no change overs)			
² H	200 Bar µl	0.15	
¹³ C	100 Bar µl	0.01	
¹⁵ N	100 Bar µl	0.01	
¹⁸ O	100 Bar µl	0.015	
³⁴ S	100 Bar µl	0.015	
Single cold finger volumes (10 change overs)			
¹³ C	20 Bar µl	0.01	
¹⁸ O	20 Bar µl	0.015	
¹³ C	3 Bar µl	0.02	
¹⁸ O	3 Bar µl	0.03	
CAPS (n=5)			
¹³ C	50 µg CaCO ₃	0.03	
¹⁸ O	50 µg CaCO ₃	0.06	
WES (n=5)			
² H		1.0	
¹⁸ O		0.05	
Manifold (10 tubes)			
² H		0.5	
¹³ C		0.02	
¹⁵ N		0.02	
¹⁸ O		0.03	
³⁴ S		0.03	

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

HS20-22			
Reference Gas Precision (n=5)			
¹³ C	(CO ₂)	0.06	
¹⁵ N		0.06	
¹⁸ O	(CO ₂)	0.06	
³⁴ S	(SO ₂)	0.1	
² H		0.4	

Reference Gas Linearity			
¹³ C	≤0.02‰/nA		
¹⁵ N	≤0.02‰/nA		

IsoEarth & IsoEarth+					
Combustion (n=5)					
¹³ C	100 µg C	0.1		10 µg C	0.8
¹⁵ N	100 µg N	0.15		10 µg N	1.5
³⁴ S	25 µg S	0.3		10 µg S	1.0
Dual	400 µg C	0.1		100 µg N	0.15

Integra2			
¹³ C	100 µg C	0.2	
¹⁵ N	100 µg N	0.3	
Dual	100 µg N & 400 µg C	0.4 & 0.15	
³⁴ S	30 µg S	0.5	
¹⁸ O	100 µg O	0.5	

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

Special tests

Sales Signature: <u>Jo'cannon</u>	Date: <u>19/3/24</u>
Test Signature: <u>[Signature]</u>	Date: <u>12/7/24</u>

7: ASSEMBLY AND TEST RECORD

Client:	NERC - BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

PRODUCT:

HT-EA

SERIAL NUMBER:

11501/6 - 2024/1328

 ASSEMBLED:
 (Name)

[Signature]

 Date: 26/2/24

 PRE-TEST
 INSPECTION:
 (Production name)

P. Hayes

 Date: 26/2/24

 PRE-TEST
 INSPECTION:
 (Test name)

[Signature]

 Date: 12/7/24

 SYSTEM TEST:
 (Name)

[Signature]

 Date: 12/7/24

 PRE-DESPATCH
 INSPECTION:
 (Name)

P. Hayes

 Date: 18/3/24

P.A.T. Test results

 In compliance with Low Voltage directive 73/23/EEC
 To Low Voltage standard EN61010 - 1:1993

Earth Continuity

0.052 Ω

Insulation

> 300 $M\Omega$

Earth Leakage Current

0.50 mA. @ 0.27 kVA.

Tested by:

[Signature]

Date:

26/2/24

7: ASSEMBLY AND TEST RECORD

Client:	NERC – BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

 PRODUCT: HIS 2022

 SERIAL NUMBER: 20402/3-2024/1328

 ASSEMBLED: [Signature]
 (Name)

 Date: 6/11/2023

 PRE-TEST
 INSPECTION: P. Hays
 (Production name)

 Date: 6/11/23

 PRE-TEST
 INSPECTION: [Signature]
 (Test name)

 Date: 12/7/23

 SYSTEM TEST: [Signature]
 (Name)

 Date: 12/7/24

 PRE-DESPATCH
 INSPECTION: P. Hays
 (Name)

 Date: 18/3/24

P.A.T. Test results

 In compliance with Low Voltage directive 73/23/EEC
 To Low Voltage standard EN61010 – 1:1993

 Earth Continuity 0.065 Ω

 Insulation > 300 MΩ

 Earth Leakage Current 0.25mA mA. @ 0.5 KVA kVA.

 Tested by: [Signature]

 Date: 6/11/24

8 - Serial Numbers Record Document

Client:	NERC - BGS		
Quotation Number:	17667	Date:	26/10/2023
Job Number:	IN1328	Date:	22/11/2023

Units	S/N
MS/ABCA	20402/3-2024/1328
Integra 2	11
Prep Unit 1	11501/6-2024/1328
Prep Unit 2/Misc	/
Electronics Upgrade	/
CETAC	/
Gas Box	/
Autosampler	/
BCR	
Dual Heater Block	

Pump Kit and Optics	S/N
Turbo pump S	230316124
Turbo pump A	230895577
Rotary Pump	230323479
Voltage	110 / 240
Gauge S	230314232
Gauge A	230312826
Source	2010145-230
Collector 1	20301-148
Collector 2	20301-061
Magnet	139

Parts	S/N
Fan PSU	
24V PSU	

PCBs	S/N
Electronics Box	20230022
Prep PCB	
VFC PCB	23009
Watchdog PCB	
Head Amp PCB 1	23029
Head Amp PCB 2	23024
Electromagnet RP	

Furnaces	S/N
Combustion	
Reduction	
HT-EA	
GC Oven	
Furnace 1	
Furnace 2	

PC	S/N
PC	1J6N023
Monitor	JY6H2V3
Printer	

Key

Pumps:	E: Edwards P: Pfeiffer
Furnaces:	V/S: Vecstar E: Elite
Magnet:	E: Electromagnet S: Standard
Turbos & Gauges:	S: Source A: Analyser
Collectors:	Std: Standard S: Sulphur HD: Hydrogen Deuterium

Additional System Info:

Liquid Autosampler : 221591



Packing List

Customer Reference: 4060287547

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Consignee:

NERC - BGS Keyworth
British Geological Survey
Kingsley Dunham Centre
Keyworth, Nottingham, NG12 5GG

Upon arrival the driver should proceed via Security at the main front entrance to BGS on Nicker Hill straight ahead to the back of the lab building EGL-1 to unload. The delivery should not go to Goods Inward at the back of the BGS site.

Tel: +44 (0)1270 580008
Reference: IN1328

Contact Name: Jack Lacey
Contact Tel Number: 07595676016

BOX: 1

Quantity	Product Code	Product Description	Serial Number: if available
☒ 1		PC. (Software and windows recovery drives inside box)	IJ8N023
☒ 1		Monitor	JY8H2V3
☒ 1		Rotary Pump and filter. (Oil left in)	230323479
☒ 1	SI0685	E-Magnet and feet	139
☒ 3		Dangerous goods (3 boxes)	
☒ 1		Box. 16 amp Mains cable. 2022 mains cable HT-EA top fitting.	
☒ 1		Box. Liquid sampler PSU and mains cable Signal cable. (to 2022) Sample jars	
☒ 1	70201-1	Analyser spares kit	
☒ 1	70801-1	Pyrolysis start up kit high temp for solids	
☒ 1	71501-1	HT-EA Pyrolysis start up kit	
☒ 1	71501-8	HT-EA Pyrolysis kit for water injections	

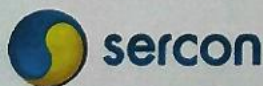
Packed by:

P. Haynes

Date:

18/3/24

Claims for damage or shortages must be made within 3 days



S035b_v6

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74
19/01/2017



sercon
innovators in isotopes

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1328

Box 2

HS2022 (20402/3-2024/1328)

P. Hayes 18/3/24

Box 3

HT-EA standalone (11501/6-2024/1328)

P. Hayes 18/3/24

Box 4

Liquid Autosampler (221591)

P. Hayes 18/3/24

Box 5

Versa autosampler.

P. Hayes 18/3/24.



sercon

S035b_v6

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: .

Pa

Cust

Cons

NERC
Britis
Kings
Keyw

Upor
main
to th
deliv
BGS

Cont
Cont

Works Order Picking List

Date: 18/12/2023
Time: 11:31:11

Works Order: WO02082
Stock Code: 70201-1
Description: Analyser spares kit - Included
Qty Required: 1.00 Each
Qty Outstanding: 1.00
Plan Period: WK48/2023
Due Date: 27/11/2023

Stock Code / Description Qty to Pick Unit Location Qty Picked / By

Manufacturing Instructions: IN1328 - NERC (2022)

SC0063 Edwards Rotary Pump Oil - Ultra grade 15 - 1L	1.00	Each	A-A2	1
SC8407 Snoop Liquid Leak Detector 2oz	1.00	Each	A-C3	1
SC0032A Copper Gasket DN63CF Pk/1	5.00	Each	A-G4	5
SC0033A Copper Gasket DN40CF Pk/1	5.00	Each	A-G4	5
SC0038 Source Tool Kit	1.00	Each	B5	1
SI0703 1/8-1/16" PTFE Reducing Ferrule Pk/1	5.00	Each	B-J5	5
SC0028 Filament, 20-20 Pk/1 BN 201123	1.00	Each	B-O2	1

All items picked and packed as marked:

Date: 22/12/23 Signed: P4

Stock Allocated, Issued, Completed:

Date: 22/1/24 Signed: JOC

Works Order Picking List

Date: 18/12/2023

Time: 11:30:45

Works Order: WO02083
Stock Code: 71501-8
Description: HT-EA Pyrolysis Kit for Water injection
Qty Required: 1.00 Each
Qty Outstanding: 1.00
Plan Period: WK51/2023
Due Date: 08/01/2024

Stock Code / Description Qty to Pick Unit Location Qty Picked / By

Manufacturing Instructions: IN1328 - NERC

SC2667 EMASorb II A Granular 20-30 mesh 25g	20.00	Each		* 20
SC2332 Ceramic Tube with Molybdenum Foil Liner	10.00	Each	A-B2	10
SC0062 Amber Vials 2ml, pk/100	10.00	Each	A-B3	10
SC0085 Cap Kit for Threaded Joints Caps & PTFE Backed Sil Seals pk2	10.00	Each	A-B3	10
SC2495 Scrubber Tube 220mm	10.00	Each	A-B3	10
SC1421 Seal Viton Chamfered Square Profile-upper reaction tube Pk/5	5.00	Each	A-B4	5
SC0151 Nickel Wool Fine Wires 2g	5.00	Each	A-B7	5
SC0039 Glassy Carbon Chips Eurovector 2-3mm 100g	5.00	Each	A-C3	5
SC0162 Magnesium Perchlorate Gran 0.7to1.2mm H2O Absorbent 25g	20.00	Each	A-C3@	* 20
SC0182 High Purity Carbon Granular 0.3 to 0.85mm 5g	5.00	Each	A-C4	5
SC0061 Septa LB-2 INACTIVE - USE SC2616	5.00	Each	A-G2	5

All items picked and packed as marked:

* DATA GOODS
PACKED SEPARATELY

Date: 16 / 1 / 24 Signed: Per

Stock Allocated, Issued, Completed:

Date: 22 / 1 / 24 Signed: JOC

Works Order Picking List

Date: 15/12/2023

Time: 09:06:48

Works Order: WO02073
Stock Code: 70801-1
Description: Pyrolysis Start Up Kit high temp for S
Qty Required: 1.00 Each
Qty Outstanding: 1.00
Plan Period: WK5/2024
Due Date: 22/02/2024

Stock Code / Description Qty to Pick Unit Location Qty Picked / By
Manufacturing Instructions: IN1328 - NERC (HT-EA)

SC2332 Ceramic Tube with Molybdenum Foil Liner	2.00	Each	A-B2	2
SC0085 Cap Kit for Threaded Joints Caps & PTFE Backed Sil Seals pk2	2.00	Each	A-B3	2
SC2495 Scrubber Tube 220mm	2.00	Each	A-B3	2
SC1421 Seal Viton Chamfered Square Profile-upper reaction tube Pk/5	1.00	Each	A-B4	1
SC0039 Glassy Carbon Chips Eurovector 2-3mm 100g	1.00	Each	A-C3	1
SC0182 High Purity Carbon Granular 0.3 to 0.85mm 5g	1.00	Each	A-C4	1
SC0036 Silver Capsules Pressed 6 x 4mm Pk/100	1.00	Each	A-D2	1

All items picked and packed as marked:

Date: 22 / 12 / 23 Signed: P Li

Stock Allocated, Issued, Completed:

Date: 22 / 01 / 24 Signed: JOC

Works Order Picking List

Date: 15/12/2023

Time: 09:06:59

Works Order: WO02074
Stock Code: 71501-1
Description: HT-EA Pyrolysis Start Up Kit O and H
Qty Required: 1.00 Each
Qty Outstanding: 1.00
Plan Period: WK5/2024
Due Date: 22/02/2024

Stock Code / Description Qty to Pick Unit Location Qty Picked / By
Manufacturing Instructions: IN1328 - NERC (HT-EA)

SC2332 Ceramic Tube with Molybdenum Foil Liner	2.00	Each	A-B2		2
SC2495 Scrubber Tube 220mm	1.00	Each	A-B3		1
SC1421 Seal Viton Chamfered Square Profile-upper reaction tube Pk/5	1.00	Each	A-B4		1
SC2668 EMASorb II B Granular 1.6-3mm 8-20 mesh CO2 25g	4.00	Each	A-C2@	*	4
SC0039 Glassy Carbon Chips Eurovector 2-3mm 100g	1.00	Each	A-C3		1
SC0162 Magnesium Perchlorate Gran 0.7to1.2mm H2O Absorbent 25g	4.00	Each	A-C3@	*	4
SC0182 High Purity Carbon Granular 0.3 to 0.85mm 5g	1.00	Each	A-C4		1
SC0036 Silver Capsules Pressed 6 x 4mm Pk/100	1.00	Each	A-D2		1

All items picked and packed as marked:

Date: 22/12/23 Signed: PL

Stock Allocated, Issued, Completed:

Date: 22/01/24 Signed: Joc

* DANGEROUS GOODS
PACKED SEPARATELY

11 – Installation Report

Client:	BGS Nottingham		
Quotation Number:	17667	Date:	26/10/23
Job Number:	IN1328	Date:	5/12/23

Contact:	Jack Lacey		
Date of Visit:	10 th June 2024	No. of Days:	5
Engineer:	James Hanson		

Details of visit:

Day 1 – HS2022 setup on bench and pumping down by late morning. Vacuum reached e-8 within a few hours, filament fired and readbacks normal. Helium and Hydrogen lines made and connected, He line leak checked with detector. HT furnace driven to 250 C to confirm function, responding as normal all TCs reading for GC and furnace and flow meter working. Ceramic tube seal pair not found, driving back to factory tonight to collect another. HTEA tube made using glassy carbon chips and moly liner.

Day 2 – HT furnace tube seal pair now available, furnace set to drive to 1400 C. Helium flow set to 80ml. Hydrogen peak shape found after moving Emag position, feet position now marked on top plate. Hydrogen ref gas run and passed, stability looks great. HTA liquid sampler software not connecting, reinstalled and found device. Liquid injections of tap water at 3ul used to run precision, large sample randomly seems to be after 4 injections, multiple injections set off to try and condition and precision set off again overnight.

Day 3 – HTEA furnace found off, precision failed again due to large random 4th sample. Sample size set to 1ul. HTEA interlock valve not staying on when entering standby mode, set to default to stay on. Precision run again with 1ul injections, passed precision spec hitting 0.68 permil. uCarbs system set up with other analyser, verSA would not turn on to begin with, wiring investigated and system now turns on. He line attached to Aqua box, comms established with PC. New software on other PC ported onto other PC connected to the uCarbs system analyser. VerSA software configured and controls sampler. Analyser control valves found and bitmap altered to suit.

Day 4 – uCarbs analyser valves found to be faulty, swapped for spare ones in boot stock. CO2 ref gas used to tune source. Sample line connected to analyser and flow established. Heated block set to 50 C. Acid provided and lined into bottle. Breath samples used to check for peaks, GC driven to 70 C. Peak observed, breath precision batch set off and passed 0.06 permil. Will try CaCO3 tomorrow. Liquid sampler HTEA loaded with BGS samples and large sample list made. Ref gas peak added into events with sample peak. Needle error occurred pre injection, solved with sampler restart. 174 sample injection run set off overnight as stress test. Training provided to cover system components, source filament pins, source tuning, daily system checks, making a sample list, reprocessor functionality and data retrieval, .prn file location, start up and shut down procedure.

Day 5 – Liquid sampler still running, all sample peaks looking very consistent sizes and no random looking results. KCN 1mg samples put through the uCarbs using double acid dose and 70min reaction time @50 C heated block and GC 70 C. Precision of 0.07 permil achieved.

Recommendations:

Report any issues to service@sercongroup.com

Faults and Shortages:

2 x 3 Port He Valves (Broken on old MS, 2x replaced by JH using boot stock – units to be paid @ £41 p/u)
 8 x 5 unit Bags SC1421 tube seals delivered – wrong type for HT furnace – to be replaced with correct type

11 – Installation Report

Client:	BGS Nottingham		
Quotation Number:	17667	Date:	26/10/23
Job Number:	IN1328	Date:	5/12/23

Follow up:	
Engineer: JAMES HANSON	Date: 14.6.24
Signed: <i>James Hanson</i>	

12 – Installation Acceptance and Warranty Certificate

Client:	BGS Nottingham		
Quotation Number:	17667	Date:	26/10/23
Job Number:	IN1328	Date:	5/12/23

Contact:	Jack Lacey
System:	HT-EA (Liquid Sampler) HS2022 and uCarbs (loan unit)
Software:	Callisto v40.7.3
Engineer:	James Hanson
Installation Date:	10 th June 2024 – 5 days

Warranty commences:	14/06/24
Warranty Expires:	13/06/29

Customer Acceptance:

Name: JACK LACEY

Signature: 

Date: 14/6/24

Engineer's Signature:

On behalf of Sercon Limited

Name: James Hanson

Signature: 

Date: 14.6.24

Notes:

11 – Installation Report

Client:	British Geological Survey - Nottingham		
Quotation Number:	17667	Date:	26/10/23
Job Number:	IN1328	Date:	5/12/23

Contact:	Jack Lacey		
Date of Visit:	25 – 27 November 2024	No. of Days:	3
Engineer:	James Hanson		

Details of visit:

HTEA REPLACEMENT REINSTALLATION

Day 1 – Established comms and reconnected Helium line to HTEA. Confirmed HTEA furnace drive and GC drive. Flow and pressure set to 20 PSI and 100ml at injection port. New ceramic tube w/ glassy carbon chips made by Carol and installed by myself. He flow confirmed 100ml at exit of HTEA. Flow meter in 2022 reading 78-80ml, acceptable. Hydrogen lines needed purging, assisted Carol to purge Hydrogen line in this lab and other lab for 2 minutes. Hydrogen ref gas left to flush through system for a while. Hydrogen peak shape found, stability checked and looking good, ref gas precision passed with H3+ correction of 4. Furnace set to drive to 1400, flow set to 30ml, left overnight at full temperature. Liquid sampler not communicating with PC, will speak to Sercon software support for help in the morning.

Day 2 – Liquid Sampler communication resolved with help from Sercon software team. Sampler settings programmed with Carol. Confirmed timing is the same as previous instrument, peak for Hydrogen at the correct time for integration window. Samples run but peaks inconsistent heights, flow changed to be as Dave Harris set it up previously – Helium flow is always through the centre/top port on the injection port, only switching to the bottom port for 2 seconds while injecting. Sample peaks now much more consistent. Long run of 200 injections set off overnight.

Day 3 – Top of the HTEA cabinet much colder than previous system, flow still at 78-80ml. Run still ongoing, numbers looking good around 1.0 STD on average between final 3 injections of 4 total injections per sample. Run finished, results look good. Tap water precision run hit 0.65 STD.

Recommendations:

Faults and Shortages:

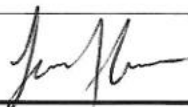
Follow up:

Report any issues to service@sercongroup.com

Engineer: James Hanson

Date: 27/11/24

Signed:



12 – Installation Acceptance and Warranty Certificate

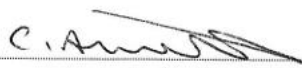
Client:	British Geological Survey – Nottingham		
Quotation Number:	17667	Date:	26/10/23
Job Number:	IN1328	Date:	5/12/23

Contact:	Jack Lacey
System:	HT-EA REPLACEMENT UNIT ONLY (HS2022 warranty from previous install and liquid sampler warranty still apply)
Software:	Callisto v50.0.0
Engineer:	James Hanson
Installation Date:	25-27 November 2024

Warranty commences:	27/11/24
Warranty Expires:	26/11/29

Customer Acceptance:

Name: C. A. ARROWSMITH

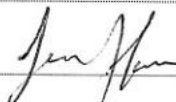
Signature: 

Date: 27/11/24

Engineer's Signature:

On behalf of Sercon Limited

Name: James Hanson

Signature: 

Date: 27/11/24

Notes: