Version 1: 4th March 2016.

Catalogue S, for box-files S1 – S5.

Catalogue of historical computer documents donated in December 2015 by Eric Sunderland (box-files S1 – S5).

Background and scope.
Eric Sunderland was born in 1943 in Burnley, graduated from Manchester University with a Physics degree in 1963 and joined Ferranti West Gorton the same year. He trained on the job as an Atlas Maintenance Engineer and remained with the company until 1973 when he became a Senior Experimental Officer in the Department of Computer Science – a role he fulfilled until his retirement in December 1993.

Eric was an outstanding Atlas engineer, taking over in 1965 from Frank Sumner as the local expert on the interface between Supervisor and hardware. In early 1967, he was transferred from being an engineer's shift leader to providing Supervisor support, thus being responsible for analysing Supervisor post mortems for periods when members of the Ferranti Supervisor team such as David Howarth and Mike Wyld were not able to remain on site. This led naturally to an involvement with Atlas performance analysis and the gathering of data that contributed to the design of Atlas's successor, MU5. As part of this research Eric obtained an M.Sc. in 1970, the title of his thesis being *Automatic Program Tracing.*

The main emphasis of the material in Eric Sunderland's collection is the hardware and software for the Manchester Atlas, 1962 – 1971. The collection also contains material on the architecture of the MU5 computer system, 1968 – 1978.

Box-files S1 – S3 are of standard size. Box-files S4 and S5 are each cardboard boxes measuring approximately 30cms by 60cms; they contain the over-sized items in Eric Sunderland's collection. The oversized items appear as standard entries in the full catalogue below. For convenience of checking, the contents of S3 and S4 are also listed separately at the end (pages 10 – 13).

Box	***Date***	***Title***	***Description/comments.***
S1	1958	The Autocode programs developed for the Manchester University Computers. R A Brooker.	Bound reprint from the Computer Journal, Vol. 1, Issue 1, pages 15 – 21, 1958. (Describes programs for the Ferranti Mark I and mercury.
S1	1958	Reprint of three IEE papers on computer hardware.	(a) The design of the control unit of an electronic digital computer. Wilkes, Renwick & Wheeler. (Microprogram store for EDSAC 2); (b) A decimal adder using a stored addition

			table. Maclean & Aspinall; (c) An accurate electroluminescent graphical-output unit for a digital computer. Kilburn, Hoffman & Hayes.
S1	1959	The Atlas One-level Store. R A Brooker & F H Sumner. May 1959.	Yellow folder containing a 19-page typed foolscap document. This study assumes 16 blocks of main store, each of 512 words, backed by a drum. Gives program fragments and estimates likely swapping-times for the following algorithms: matrix multiplication; matrix transposition; roots and vectors of a symmetrical matrix by the Jacobi method; cross correlation & partial differential equations; solution of simultaneous equations. It is thought that this document, which represents a step in the evolution of the final Atlas system, was for internal discussion only.
S1	1959	The Manchester Mercury Autocode system: No. 5, a glossary of terms and formulae. S Michaelson & D G Burnett-Hall. Oct. 1959, issue 2.	Yellow cover, 54 foolscap pages.
S1	1961	A description of Mercury Autocode in terms of a phrase structure language. R A Brooker & D Morris.	A Ferranti reprint, grey covers. The original paper appeared in Annual Review in Automatic Programming, Vol. 2, 1961, pages 29 – 65.
S1	1961	Some proposals for the realization of a certain assembly language. R A Brooker & D Morris.	Reprinted from the Computer Journal, Vol. 3, No. 4, 1961, pages 220 – 231.
S1	1961	The Manchester University Atlas operating system. Part I: internal organisation. T Kilburn, D J Howarth, R B Payne & F H Sumner. Part II: users' description. D J Howarth, R B Payne & F H Sumner.	Reprinted from the Computer Journal, Vol. 4, issue 3, 1961, pages 222 – 225.
S1	1962	TR5 paper tape reader logical diagram; teletype logical diagram.	Two foolscap engineering drawings, showing data and control signals and waveform names. One of the drawings is dated 12/12/1962.
S1	c. 1962	Ferranti Flexowriter code.	Single typed foolscap sheet, giving the upper-case and lower-case meanings of all combinations of the 7-bit code. (2 copies).
S1	c. 1962	Atlas B Adder operating strobes.	Single typed foolscap sheet showing, in tabular form, the basic B functions (instructions) and the operating strobes present during G3.
S4 **	c. 1962	Set of Atlas schematic and logic diagrams. *(As at 22/2/2016 this item is in the School of Computer Science)*	Dull green folder contains about 240 Atlas engineers' diagrams, each approximately 40 cms by 20 cms. They have various dates (eg: 17/7/62, 17/8/62, 4/12/62, 22/5/63, etc.). The notation used for the title of each diagram is that 'OD' generally signifies

			'overall schematic' and 'ED' generally signifies 'logic diagram'. By examining diagrams of type ED one can deduce signal names, signal polarities, monitor points on packages, package types and physical package positions. The physical positions are specified in terms of bay/box/slot. Some indication of the level of detail may be gained from the numbers of diagrams covering each topic, for example: Distributor (17 drawings), Central control (18 drawings), Accumulator (19 drawings), core store co-ordinator (20 drawings), etc. etc.
S1	1962; 1963	Summary of Atlas basic instructions.	Single typed foolscap sheet, giving the functions in octal 100 to 370 and their algebraic interpretation. Two versions: (a) dated 24/7/1962; (b) 2/5/1963 (4 copies).
S1	1963	Atlas computer: summarised programming information. Ferranti Ltd. (later ICT) June 1963. List CS 384	Double-sided still cardboard sheet, giving the Atlas instruction set, floating-point format, ABL facilities, etc., in a condensed form. Several copies.
S4	c. 1962	Large block diagram of Atlas	50cms x 35cms detailed system diagram, folded in half and protectively wrapped in transparent film. Shows the main units and the interconnecting data and address signals. Includes a large amount of technical facts and explanatory comments.
S1	1962	The Atlas Supervisor. T Kilburn, R B Payne & D J Howarth.	Reprinted from *Computers: key to total systems control.* AFIPS. February 1962, pages 279 – 294.
S1	1962	List size restrictions in the current version of the Atlas Fortran compiler. B Stokoe & E B Fossey. 12th February 1962.	Single typed foolscap sheet.
S1	1962	Trees and routines. R A Brooker, D Morris & J S Rohl.	Reprinted from the Computer Journal, Vol. 5, No. 1, 1962, pages 33 – 47.
S1	1963	An investigation of computer-controlled traffic signals by simulation. R L Grimsdale, R W Mathers & F H Sumner.	Small-sized green booklet. Reprinted from Proc. Instn. Civ. Engineers, Vol. 25, June 1963, pages 183 – 192.
S1	1963	Specification for dimensions of punched tapes used with Ferranti computers. Ferranti Ltd., List CS364, January 1963.	6-page printed A4 technical brochure. A note on the last page indicates that the author was Hugh McGregor Ross, 17th January 1963.
S1	c. 1963	Functional descriptions of some Atlas central processor sub-units.	Red foolscap folder containing typed foolscap sheets that were probably part of the documentation given to Atlas maintenance engineers during their time at Ferranti's West Gorton *Engineering Training School*. Eric has commented that the first generation of maintenance engineers for the Manchester Atlas

			more or less 'learned on the job' and that these hand-outs were probably produced after 1963 when engineers for the other Atlas installations (London, Chilton, etc.) were being trained at West Gorton. The documents are: (a). The Central Computer, Chapter One (5 pages); (b) The Atlas B Adder (full parallel adder) (16 pages, including circuit diagrams of printed-circuit packages 811, 812, 813 & 814); (c) Multiplier (4 pages).
S1	1963 - 1964	Atlas Peripheral V-Store: digits, addresses and LAM tree. Drawings OD 4.02, 4.03	Single sheets (approx. foolscap size), giving information such as a table of <equipment-name> <V-Store addresses> <interpretation of 24-bit V line for that address>. Also, the Look-at-Me (LAM tree). One document includes the Speech Converter, from which one can deduce 1964 as the approx. date of this document. Another document is dated 3/2/1963. Several copies. (See also central V-Store, 1966, below).
S1	1964	Atlas PAT tests, Mark 2. (In three green folders)	October/November 1964 (includes the Speech Converter). This comprises about 150 foolscap pages of ABL code, split for convenience into three green folders. This is the complete set of engineers' tests for the entire Manchester Atlas system (including peripherals), as at autumn 1964. Contains some hand annotations. Brown paper separators (marked A, B, C, …) were used to distinguish various sections of the program listing, such as central routines, drum tests, magnetic tape tests, etc. it is believed that the initial version of PAT tests was written by Peter Duncanson of Ferranti West Gorton. Eric Sunderland has said that the PAT Test "was the quickest way of making sure the machine was in reasonable order".
S2	c. 1964	Atlas magnetic tape system: interrupt routines and other documentation.	Yellow foolscap folder, containing: (a) a 16-page typed description of Interrupt Routines R401 – R407, R411 – R413, R419 & R421; (b) also, a 2-page description of mag tape flip-flops in the Subsidiary Store; (c) also, a single-page list of abbreviations used in mag tape documentation. (d) Foolscap diagram of digits in mag tape working stores; (e) 8 foolscap sheets of flow charts for dealing with mag tape interrupts. There are duplicate copies of all of the above documents.
S2	1964	Input and output for ICT Atlas computers 1 & 2. ICT, April 1964	A4, 31 pages. "This document is a corrected and expanded version of chapter 8 of the Atlas provisional programming manual (CS348) and supersedes the Provisional corrected version of

			Chapter 8 dated September 1963."
S2	1964	Preparing a complete program for Atlas 1. ICT, Aug. 1964	A4, 23 pages. "This document replaces both chapter 10 of the Atlas provisional programming manual (CS348) and the October 1963 Provisional corrected version of Chapter 10. It also replaces an earlier document entitled *Preparing a complete program* dated Sept. 1963".
S2	c. 1964	Atlas scheduling rules.	Two-page typewritten document, approx. A4 size. Undated; probably written by Eric Sunderland as a straightforward guide for Atlas operators.
S4	1965	The ICT Atlas 1 computer programming manual for Atlas Basic Language (ABL). List CS 348A, January 1965.	Thick (approx. 3cms) A4 manual, white covers, black spiral binding. Bound in at the beginning are 5 + 8 pages of Addenda/corrigenda issued August 1965 which, together with the main part of the manual, "describe the facilities available to the ABL programmer using the Supervisor known as Mark 10".
S4	1965 - 1967	The ICT Atlas 1 computer programming manual for Atlas Basic Language (ABL). List CS 348A, January 1965, but reprinted and re-bound in June 1967.	Dull red covers. In this edition "a few minor corrections have been made to the text; a full set of amendments is included as an appendix to this volume [so that] this edition covers all the facilities available to the ABL programmer up to June 1967".
S2	1965	Atlas Computer Laboratory: Users' Handbook. January 1965.	Yellow covers, A4, 24 pages. "The machine was ordered in the autumn of 1961; it is due to come into operation not later than 31st March 1965".
S2	1965	Segmentation and the design of multi-programmed computer systems. J B Dennis.	Reprinted from 1965 IEEE International Convention Record, part 3, pages 214 – 225.
S4	1965	Ampex magnetic tape deck logic. Ferranti drawing LDP/0404.	Large (100 cms x 75 cms) logic diagram, folded to measure 25 x 37 cms. Shows printed-circuit board types (mostly in the range 934 – 940), board-positions (eg A/12), signal-names and monitor-positions on pcbs (eg A/12/M3). Annotated in pencil on reverse: "Atlas TM2 logic diagram".
S2	c. 1965	Peanut puzzle.	This is a demo program for 'young' visitors to Atlas. The program determines whether a pile of x peanuts can be shared in a certain way between four monkeys, for x = 1 step 1 to 2000. For each successful division, the results are printed. Program is written in Atlas Autocode. A sample lineprinter output is given.
S2	c. 1965	Miscellaneous Atlas program notes and code fragments.	Includes five pages of hand-written machine instructions: (a) possibly concerned with testing slow peripherals; and (b) notes on job description, job-list and priorities. Also, page of lineprinter output containing code and data.
S2		*Automatic program tracing* by Frank Sumner & Eric Sunderland.	Manuscript. 10 typed pages (small sized) with hand-written annotations. Undated, but deduce about 1970.

S4	1966	Atlas 1: Central computer. ICT manual EP 89, 1966.	A4 Technical manual (about 3 cms thick), white cover with blue spiral binding. Gives a detailed operational description of sub-units, including waveform-names, block diagrams and references to the separate collection of Atlas logic diagrams. Includes the Accumulator, B & C units, Distributor, Peripheral Co-ordinator and Console.
S2	1966	Two items relating to Atlas Intermediate Input C. (a). Specification of IIC. 18th January 1966. (b) Mods to Supervisor via IIC.	This collection of items is in a yellow folder. "IIC is a machine-code compiler which will compile at a rate of rather more than two instructions per instruction interrupt". Item (a) is 5 typed pages, approx. A4 size. Anon but probably written by Eric Sunderland. (3 copies, one approx. foolscap size with handwritten annotations. Item (b) is two handwritten foolscap pages of notes and code, plus two sample job descriptions plus a two-page listing of a complete IIC program entitled 'Update MUSE'.
S2	1966 ?	Intermediate Input F (IIF).	"The IIF compiler accepts programs in IIC format but applies certain somewhat more rigorous checks". 6-page typed document, approx. A4 size. Undated and anon, but probably written by Eric Sunderland.
S2	1966	Atlas central V-Store. E S. 20th May 1966.	Single sheet of lineprinter output, tabulating the V-Store addresses and bit-assignments for the central machine, the core store, the drum store and the magnetic tape system. Two copies. (See also 'Peripheral V-Store' above, 1964).
S2	1966	The main features of Atlas Autocode. R A Brooker, J S Rohl & S R Clark.	Reprinted from *The Computer Journal,* Vo. 8, No. 4, January 1966. (two copies)
S2	1967	Variable input code conversion at MUSE. D J Howarth, 25th April 1967.	Single foolscap typed sheet. "In the near future, it is proposed to permit selection of non-standard input codes by use of suitable warning characters".
S2	c.1968	On line fault monitoring on MUSE.	Single typed A4 sheet, undated and unsigned but deduce 1967/8 by Eric Sunderland. (4 copies).
S2	1968	Automatic fault monitoring and restart procedure on the SRC Atlas. E. Sunderland, 16th February 1968.	11 typed pages, approx.. A4 in size. Informative technical description of mechanisms for automatic and manual restart after a fault has been detected and how to interpret the fault print-out and post-mortem data.
S4	c. 1968	Implementation of disc versions of tests on SRC Atlas. E Sunderland.	Buff folder containing approx. 30 pages of ABL program listings and comments. The engineers' tests date from the time when a large file disc (a Data Products model 5045, of capacity 16.8 million 48-bit words) was attached to the Chilton Atlas in about February 1968. (This installation was variously known as the SRC Atlas, the NIRNS Atlas or the Chilton Atlas). Eric was sent to Chilton by Ferranti to help with the Supervisor

<table>
<tr><td></td><td></td><td></td><td>and Engineers' Test program modifications necessary when the file disk was attached.</td></tr>
<tr><td>S2</td><td>1968</td><td>MUSE disc file object program use. E Sunderland, 22nd July 1968.</td><td>5 typed foolscap pages, describing how Atlas end-users can create and use space on the large file disc.</td></tr>
<tr><td>S5 **</td><td>1966 - 1970</td><td>Eleven Atlas Supervisor and engineers' test tapes. (As at 22/2/2016 this item is stored in the School of Computer Science)</td><td>These are Ampex one-inch tape reels, each in its container which is approximately 30cms in diameter. The reels are labelled thus:
<table>
<tr><th>Tape No.</th><th>Eric Sunderland's description</th></tr>
<tr><td>1</td><td>E90 10/1970. ES Master tape. Supervisor 1 – 700; Tests 701 – 1000; Semi-compiled supervisor: 1050 – 1295; Fixed Store 1350 (16 blocks)</td></tr>
<tr><td>2</td><td>2/10; Master Supervisor M1; No. blocks: 750; date = 23/2/1967.</td></tr>
<tr><td>3</td><td>2/7 SUP No. of blocks = 752; Date = 23/2/67;</td></tr>
<tr><td>4</td><td>ES2; E76T; Semi-sup at following dates: 10/12/68; 2/4/69; 10/4/69; 7/69; 10/70.</td></tr>
<tr><td>5</td><td>2/9; 752 blocks; 14/4/67</td></tr>
<tr><td>6</td><td>MUSE Supervisor 4/4/1/66</td></tr>
<tr><td>7</td><td>2/5. 25/7/67. 738 blocks.</td></tr>
<tr><td>8</td><td>Eng DT. No. of blocks: 550; date = 22/2/67.</td></tr>
<tr><td>9</td><td>E211T; Master tests ENG MT; 4K WS test. On H/S 2.0. 16/1/66.</td></tr>
<tr><td>10</td><td>ES Harwell tests. E75T.</td></tr>
<tr><td>11</td><td>Ampex tape reel without its case; un-labelled. (Possibly unused).</td></tr>
</table></td></tr>
<tr><td>S2</td><td>1969 - 1970</td><td>Experiments to determine page usage and other run-time statistics for a range of Atlas user-programs.</td><td>Experiments conducted by Eric Sunderland in the period Sept. 1969 to August 1970. Buff foolscap folder containing:
(a) code of a program to modify the Supervisor so that page-usage information is preserved to disc;
(b) several sample lineprinter outputs of the statistics;
(c) two double-foolscap sheets of squared paper on which Eric Sunderland has transcribed many results.
These experiments were carried out for Frank Sumner, who at the time had a Ph.D. student studying paging behaviour.</td></tr>
<tr><td>S2</td><td>1969 – 1970</td><td>More Atlas experiments: checking usage of pages between drum-to-core and core-to-drum.</td><td>Red foolscap folder containing code, lineprinter output and notes.</td></tr>
<tr><td>S2</td><td>1969 – 1970</td><td>More Atlas experiments: checking the frequency of instruction-types, etc.</td><td>Yellow foolscap folder containing code and notes.</td></tr>
<tr><td>S2</td><td>c. 1969</td><td>Thoughts on an MU5 instruction buffer and jump-trace unit, based on experiments on Atlas.</td><td>About ten hand-written pages of foolscap notes, undated, which build on the results of experiments with Atlas and work towards the design of MU5. Some of these notes may have been written by Frank Sumner. Certainly, Frank</td></tr>
</table>

			and Eric Sunderland were working closely at this time to devise and interpret various Atlas experiments.
S3	1969	Atlas fault logging. Lineprinter output of log tape, 28th Nov. 1969.	Buff folder. 11 pages of lineprinter listing, giving monitoring information in the period from 07:00 am on 28/11/1969 to 06:49 on 29/11/1969. Contained in a buff folder marked 'Atlas fault logging, 1969'. See also the explanation below.
S3	1971	Atlas fault logging. (a). Lineprinter output of log tape, 7th April 1971. (b). Store dump at 12:16:16 on 18/3/1970. (c). More engineers' print-outs.	These listings are contained in a buff foolscap folder marked in pencil as "Atlas sample fault logging/pm 1971 (disc)". During normal operation, Atlas periodically sent system monitoring information to a teleprinter and to a 7-track paper tape punch. The information was in compressed form. A day's run of this *Log Tape* could be printed out later on the lineprinter (as here) for inspection by the maintenance engineers. This particular *Log Tape* records incidents occurring in the period 09:16 on 7th April to 05:22 on 6th April. At the end is an analysis of computing time lost due to restarts (both automatic and manual). The *Log Tape* was also processed by an analysis program run by the Computing Service, from which end-users could be 'charged' for resources used by their jobs.
S4	1971	Roll of teleprinter paper containing instructions to the magnetic tape operator, 20th March 1971.	When unrolled, this roll of 8.5" paper extends for about 20 feet. It represents instructions printed on a teleprinter in the mag tape room adjacent to the main Atlas computer room at Manchester, during the period 10:05hrs to 19:46hrs on 20th March 1971. Most instructions told the operator to mount particular reels of tape on particular decks, etc. By looking at the names of tapes, it may be deduced that the Ferranti Computing Service was running jobs for much of the period. There are mag tapes mentioned which are labelled NWGB (presumably North West Gas Board) and Mawdsley, who were manufacturing and wholesale chemists. (The Mawdsley jobs were some of the earliest commercial data-processing jobs to be run regularly on Atlas). The teleprinter print-out also contains some fault-monitoring information. For example there is a message at 14:19:49 saying "Illegal function in Supervisor".
S3	c. 1969	1905E. Internal departmental memo.	An ICL 1905E was acquired by the Dept. of Computer Science in about 1969. This was both an advance platform for the development of MU5 software and, when suitably modified, a test vehicle for a set of Current Page Registers using specially-developed associative memory chips. This single-page typed memo outlines ten planned steps in the development of a System

			Program Generator (SPG) for MU5 and the simulation of MU5's Virtual Memory.
S4	1971	MU5 CPU overall diagram, issue 1, 17th February 1971.	Large register-level technical drawing (59" x 22") of MU5. Shows the data and address highways and the four associative buffer stores (the IBU jump queue, the PROP name store, the OBS name store and the SAC current page registers).
S4	1972	Code and data for Atlas four-part harmony music.	Green folder containing 15 pages (977 lines) of lineprinter output. This comprises about 118 lines of ABL code and lots of constants – many of them as hand-written annotations. The constants seem to cater for the following five tunes: The First Nowell, Whilst Shepherds Watched, Cwn Rhondda, Adeste Fidelis, God Save the Queen. The author of this code is Eric Sunderland. Note that the Manchester Atlas was switched off on 30th September 1971. This print-out of the original Atlas paper tape was produced on the Department's 1905E computer on 12th December 1972. See also: (a) the 2016 entry below, which explains the provenance of two approaches to four-part music on Atlas; (b) the 1975 entry below, for some 7-track paper tape data; (c)the 1978 entry for MU5 music.
S3	2013 - 2016	Generating four-part harmony music on the Ferranti Atlas computer at Manchester University.	Four-page A4 typed document, containing anecdotes and explanatory contributions on Atlas music from Eric Sunderland and Derek Cotton (who wrote two versions of the original programs) and Peter Whitehead (who witnessed the after-effects).
S4	c. 1975	Reel of 8-track paper tape, labelled 'Welsh Dirge'	This is believed to be the data for the MU5 four-part harmony music for the Welsh tune *Myfanwy.*
S3	c.1972	The MU5 instruction pipeline. R N Ibbett.	32-page photocopied typed manuscript (including diagrams) of the paper that was published in the Computer Journal in 1972.
S4	1973	*Farewell to Atlas*. Computer Weekly, 5th April 1973, page 6 & page 22.	Amber semi-transparent document tube, 46 cms in length, containing an article about the switch-off of the Chilton Atlas. Includes seven photos, featuring personages such as Lord Halsbury, Sir Brian Flowers, Basil de Ferranti, Peter Hall, Jack Howlett, David Howarth, Gordon Haley, Ed Mack, Eric Grundy, Arthur Humphreys & E H Cooke-Yarborough.
S3	c. 1974	MU5 Exchange OR-gate block diagram. 4/10/Fig. 2 (Issue 1).	A3 (folded). Shows general interconnection of 16 units (MU5 CPU, MU5 local store, 1905E, 1905E's local store, BTU, Mass Store, etc.)
S3	c. 1974	Notes for a presentation on MU5.	10 pages of hand-written notes, undated. Likely to be notes for a presentation using overhead projector slides and seemingly combining contributions from Frank Sumner, Roland Ibbett, Derrick Morris, etc. includes lots of technical

			data.
S3	1978	MU5 demonstration programs for the University Open Day, 20th May 1978.	Buff folder containing material organised by Eric Sunderland, including: (a) general Open Day hand-out for visitors to the university; (b) hand-out describing the MU5 computer complex; (c) Open day options for the (MU5) display register; (d) MU5 (explanation of machine currently running 20 separate interactive programs); (e) explanation of the strategy for producing four-part harmony music on MU5; (e) two lineprinter outputs of code for music programs. It seems that there was a repertoire of ten tunes for the Open Day, not all of which might have been in four-part harmony: *National Anthem, First Nowell, While Shepherds, Why are we waiting? Myfanwy, Cwn Rhondda, The Entertainer, Rachie, Away in a manger, Happy Birthday.* (f) MU5 interactive demonstration: instructions for logging on to one of 20 on-line terminals in an adjacent room.
S3	c. 1978	PDP 11/34s and MU6	Single-sheet undated A4 typed internal memo, issued by Eric Sunderland and Alan Knowles. Suggestions for the use of PDP 11/34 computers variously as front-end processors for MU6, as terminal concentrators for student use, as host for various disc drives, etc.
S3	1989	System architecture diagram of the Manchester University Parsifal transputer network.	Single-sheet A4 drawing, initialled E S 22/9/89.
S3	2012	E-mail exchanges between Eric Sunderland and SHL, autumn 2012, recalling various details of the Manchester Atlas installation.	Includes drawings and a photo of the Atlas console, drawings of the machine-room layout in Dover Street, etc. etc. This information contributed to the brochure and displays organised for the Atlas 50th Anniversary event held in Manchester in December 2012.

Oversize, boxes S4 and S5.
Below is a check-list of oversize items, for reference. Box S5 contains Atlas magnetic tapes.

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		magnetic tape operator, 20th March 1971.	on a teleprinter in the mag tape room adjacent to the main Atlas computer room at Manchester, during the period 10:05hrs to 19:46hrs on 20th March 1971. Most instructions told the operator to mount particular reels of tape on particular decks, etc. By looking at the names of tapes, it may be deduced that the Ferranti Computing Service was running jobs for much of the period. There are mag tapes mentioned which are labelled NWGB (presumably North West Gas Board) and Mawdsley, who were manufacturing and wholesale chemists. (The Mawdsley jobs were some of the earliest commercial data-processing jobs to be run regularly on Atlas). The teleprinter print-out also contains some fault-monitoring information. For example there is a message at 14:19:49 saying "Illegal function in Supervisor".
S4	1971	MU5 CPU overall diagram, issue 1, 17th February 1971.	Large register-level technical drawing (59" x 22") of MU5. Shows the data and address highways and the four associative buffer stores (the IBU jump queue, the PROP name store, the OBS name store and the SAC current page registers).
S4	1972	Code and data for Atlas four-part harmony music.	Green folder containing 15 pages (977 lines) of lineprinter output. This comprises about 118 lines of ABL code and lots of constants – many of them as hand-written annotations. The constants seem to cater for the following five tunes: The First Nowell, Whilst Shepherds Watched, Cwn Rhondda, Adeste Fidelis, God Save the Queen. The author of this code is believed to be Eric Sunderland. Note that the Manchester Atlas was switched off on 30th September 1971, so this print-out was produced by ????. See also: (a) the 2016 entry below, which explains the provenance of two approaches to four-part music on Atlas; (b) the 1975 entry below, for some 7-track paper tape data; (c)the 1978 entry for MU5 music.
S4	c. 1975	Reel of 8-track paper tape, labelled 'Welsh Dirge'	This is believed to be the data for the MU5 four-part harmony music for the Welsh tune Myfanwy.
S4	1973	Farewell to Atlas. Computer Weekly, 5th April 1973, page 6 & page 22.	Amber semi-transparent document tube, 46 cms in length, containing an article about the switch-off of the Chilton Atlas. Includes seven photos, featuring personages such as Lord Halsbury, Sir Brian Flowers, Basil de Ferranti, Peter Hall, Jack Howlett, David Howarth, Gordon Haley, Ed Mack, Eric Grundy, Arthur Humphreys & E H Cooke-Yarborough.
S5 **	1966 - 1970	Eleven Atlas Supervisor and engineers' test tapes. *(As at*	These are Ampex one-inch tape reels, each in its container which is approximately 30cms in

		2/2/2016 this item is stored in the School of Computer Science)	diameter. The reels are labelled thus:

Tape No.	***Eric Sunderland's description***
1	E90 10/1970. ES Master tape. Supervisor 1 – 700; Tests 701 – 1000; Semi-compiled supervisor: 1050 – 1295; Fixed Store 1350 (16 blocks)
2	2/10; Master Supervisor M1; No. blocks: 750; date = 23/2/1967.
3	2/7 SUP No. of blocks = 752; Date = 23/2/67;
4	ES2; E76T; Semi-sup at following dates: 10/12/68; 2/4/69; 10/4/69; 7/69; 10/70.
5	2/9; 752 blocks; 14/4/67
6	MUSE Supervisor 4/4/1/66
7	2/5. 25/7/67. 738 blocks.
8	Eng DT. No. of blocks: 550; date = 22/2/67.
9	E211T; Master tests ENG MT; 4K WS test. On H/S 2.0. 16/1/66.
10	ES Harwell tests. E75T.
11	Ampex tape reel without its case; un-labelled. (Possibly unused).