

NEPAL

**Basic and Primary Education Programme
Phase II**

Quality Assurance System
for
Janak Education Materials Centre

18 November-2 December 2000

Kenneth Cowan

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TERMS OF REFERENCE

- a) To report on progress since the consultant's last visit
- b) To help in the selection of key staff (Quality Controllers) responsible for running the system
- c) To hold meetings with Quality Controllers and with operating staff to explain the principles of quality control
- d) To assist in the implementation of the system
- e) To identify the quantities of durable textbooks delivered to each of the three pilot areas by title, and those remaining in stock for later distribution
- f) To examine conditions of storage for durable text books
- g) To establish the exact amounts of durable paper and cover board now remaining, and to calculate the approximate number of textbooks obtainable from these existing stocks.
- h) Report on activities, findings, conclusions, recommendations and next steps.

Abbreviations

BPEP	Basic and Primary Education Project
BPEDU	Basic and Primary Education Development Unit
CDC	Curriculum Development Centre
DANIDA	Danish International Development Assistance
gm ²	grammes per square metre (paper and board weight)
JEMC	Janak Education Materials Centre
MOE	Ministry of Education
PAT	Programme Advisory Team (Danida)
PPC	Primary Publishing Cell

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1

INTRODUCTION

The consultant worked in JEMC from 20 November to 1 December 2000. The purpose of the mission was to review progress since his last visit in September 2000, and to support the implementation of the draft quality control system provided on that occasion.

Out of a total of 608,000 *durable textbooks* printed in July 2000, over 500,000 had been delivered by mid November 2000, leaving the balance in stock either fully bound or awaiting later completion. Full details are shown under section 2 'Durable Textbooks'. There are no plans at present to print further copies of the durable textbooks.

The quantity of *standard textbooks* planned for production for the academic year 2001/2 is currently over 13 million, although current estimates by the marketing department suggest that this figure may increase substantially; figures up to 18 million have been mentioned. Approximately 3 million books are already held in stock, in both central and regional warehouses.

The *quality control system* remained in the draft form provided by the consultant in September 2000. The quality control cards had been translated into Nepali, but no further advance had been made toward setting up the infrastructure required, or selecting the appropriate personnel to run the system. However, Mr Ramesh Joshi, the General Manager, and Ram Chandra Silwal, the Deputy Director of Production, were united in their determination to proceed with the implementation of the complete system.

2

DURABLE TEXTBOOKS

2.1

Books Produced

JEMC have produced a total of 608,000 durable books.

Of these, 503,872 have been delivered to the three areas designated for the pilot project: Jhapa, Kavre and Darchula as follows:

275,546	Jhapa
*172,511	Kavre
55,815	Darchula
503,872	total delivered
73,809	in stock (physical check)
30,319	awaiting completion
608,000	total printed

** 154,558 books were delivered to Kavre in September, and 17,953 in November 2000*

Detailed breakdown of durable books produced

Title	grade	Jhapa	subtotal	Kavra	subtotal	Darchula	Subtotal
Nepali	2	18,872		14,523		4,620	
Maths	2	18,880		14,568		4,620	
Sero Fero	2	18,835	56,587	14,573	43,664	4,590	13,830
Nepali	3	17,150		11,390		3,650	
Maths	3	15,885		11,385		3,660	
Sero Fero	3	15,900	48,935	11,390	34,165	3,660	10,970
Nepali	4	16,540		10,386		3,165	
Sero Fero	4	16,500		10,354		3,150	
My Country	4	16,500		10,386		3,150	
Maths	4	16,943		10,381		3,150	
English	4	16,435	82,918	10,324	51,831	3,150	15,765
Nepali	5	17,410		8,555		3,050	
Sero Fero	5	17,361		8,554		3,050	
My Country	5	17,315		8,554		3,050	
Maths	5	17,345		8,584		3,050	
English	5	17,675	87,106	8,584	42,831	3,050	15,250
Totals			275,546		172,511		55,815

2.2 Paper and Board

The unused text paper and cover board is stored correctly in the paper warehouse. Some is now covered with paper stock for the standard books, which completely bars access to the durable book materials. These are only accessible to seasoned mountaineers, but the consultant carried out a complete physical stock check, the results of which are included in the table on the following page.

PAPER USAGE (in sheets)

	text paper	Cover board
Total ordered	4,666,0000	279,000
Total received at JEMC	4,617,000	281,600
Total used	3,258,500	158,100
Balance	1,358,500	123,500
Physical stock check	1,843,000	66,000

The differences between the theoretical stock balance and the physical stock check may partly be accounted for by the difficulties in carrying out an accurate physical check. The fact remains that there seems to be only half the cover board accounted for, and requests for a stock reconciliation have met with no satisfactory response so far.

Sufficient text paper remains to print 350,000 books, but cover board for only 250,000 books, although there are no immediate plans for their production.

2.3 New Plant and Equipment

All the equipment installed for the durable book pilot project is now operating correctly, including the substantial range of paper testing instruments.

The only items still awaiting delivery are the imagesetter (still on order by BPEP through a Nepalese agency) and the related imposition software. When technical specifications are available for the imagesetter, a suitable imposition system will be selected and proposed.

The Astra sewing machines and the Wohlenberg collator and binding line have effectively been closed down with the completion of the durable book pilot project, and are under cover. Apart from the sewing machines, which require a higher quality of paper than currently used in JMEC, the collator and binding line can and will be used for the production of standard books.

Given the sophistication (and cost) of these machines, it is imperative that they be kept under covers whenever they are not in use. The collator is already under a thick layer of dust, and needs to be thoroughly cleaned before covering. Without due care, these sophisticated machines will deteriorate with resultant loss of productivity and danger of breakdown.

2.4 Stacking, Packing, Storage and Transport

Shrink-wrapped packs are reasonably resistant to damp and dust, but have no protection from rough handling or dropping which can seriously damage them.

This was apparent during handling in the warehouse, observed by the consultant. Pallets had been loaded up to 1.75m high, and the various layers of shrink-wrapped packs had not been positioned solidly on the pallet. The result was that, when moved, many packs fell off and split open, spilling out the books onto the floor. These books were then left unprotected on another pallet. It was also evident that the method of packing the books in trucks by pushing the packs into all available crevices is likely to result in damage to some of them.

It is increasingly clear that *all* durable textbooks should be packed into cartons, exactly as specified for the shipments to Darchula. These cost NR32 per carton for 60 books (for

1,000 cartons) and it is certain that the price obtained could be substantially reduced for bulk production. Similar cartons are available in the UK for less than half the price obtained in Nepal.

A revised set of recommendations have been added to the quality control system for immediate adoption (see Appendix 2).

3 JEMC – THE QUALITY ASSURANCE SYSTEM

3.1 Introduction

It has been very heartening to find that, with little exception, there has been a general welcome among both management and staff for the introduction of systematic quality control. Machine operators were genuinely pleased with their achievement in producing good quality durable textbooks, and were anxious to raise quality standards in their normal production. In particular Ram Chandra Silwal is to be commended for the energy and commitment he has shown to the introduction of the measures required. And Mr Joshi has proposed bringing in an outside Nepali quality control expert (Mr Thike) to verify that quality standards at JEMC are rising consistently.

3.2 Preparations

The preconditions for an effective quality assurance system are that

1. Realistic standards for each production operation are set and agreed with the personnel concerned.
2. These to be written down, translated into Nepali, and kept for daily reference in each production department
3. Quality Controllers to be appointed to monitor the system, and to help resolve quality problems as they occur
4. Quality Assurance Sheets to be completed by quality controllers, in all cases where work is suspended for more than ten minutes in an endeavour to achieve the required quality standard
5. The quality standards to be monitored on a daily basis by the quality controller responsible, and by each machine operator through the use of Quality Check Sheets
6. Any problems in maintaining these standards to be discussed in detail at fortnightly production management meetings, with a carefully documented written record of each meeting indicating problems and solutions.
7. The Production Manager to be ultimately responsible for the successful implementation and monitoring of the quality achieved in all departments.

3.3 Developing The System

3.3.1 The appointment of the Quality Controllers (QC's).

With the agreement of Mr Joshi and Ram Chandra Silwal, four QC's were appointed, all fully technically qualified 'shift in charge' with considerable practical experience within the plant.

Those appointed were:

Madan Krishna Thapa
Bharat Lal Tandukar
Birendra KC
Uttam Sagar Mharajan

All will be directly responsible to Ram Chandra Silwal who carries the overall responsibility for the success of the system.

A meeting with the QC's was held to outline the workings of the system, and the reasons for its implementation. Samples of all the operators check sheets and the QC's quality assurance sheet, together with back-up information, were distributed and the details examined. It was agreed that, given a two-shift system, two QC's will be responsible for each shift; one for pre-press and press, and the second for binding, finishing, packing and storage.

3.3.2 Selling the System to the Machine Operators

A meeting was called, attended by some fifty machine operators, to introduce the Quality Assurance System. The system was a totally new concept to most of them, although they are all expected to maintain a fairly basic quality so that books are usable.

They were self-evidently pleased with their performance in the production of good quality durable textbooks, on which the consultant offered his congratulations. The relevant quality control cards were available for each person, and the requirements for completion explained.

While happy to adopt the new system, there was considerable anxiety that only limited improvements could be made with existing materials – specifically paper, ink and adhesives. Given the present methods of procurement (where material requirements are put out to tender, and the lowest bidder wins) it was agreed that greater efforts are now required to ensure that suppliers comply with specifications. This is a highly sensitive area politically, which requires top level discussions with the Ministry as well as detailed technical discussions with the suppliers.

Ram Chandra Silwal agreed to ensure that progress was made in sourcing better quality materials, on the basis that lower spoilage rates and less machine down-time were frequently worth more than the supposed saving made by buying the cheapest product.

An initial batch of control cards have been printed for distribution to each machine operator. These will be distributed on December 4, since 50 members of the plant are currently away on an observation visit to various suppliers outside Kathmandu, and six other members of staff are away in Calcutta for technical training (2 bindery operatives and 4 offset press minders).

Effectively this means that the complete Quality Assurance System will be launched week beginning December 4, with all QC's in attendance.

3.3.3 Operating the System

The system will work as follows:

Quality Controllers

- QC's will have an office to act as a base, but will move around the plant throughout their shift carrying out spot checks on film preparation, plate-making, printing and binding.
- QC's will be responsible for 'signing off' each of the following items
 - (a) film flats (imposed film)
 - (b) printing plates
 - (c) printed sheet (text and covers)
 - (d) folded sections
 - (e) collated sections
 - (f) sewn or side-stabbed book-blocks
 - (g) finished trimmed books
 - (h) shrink-wrapped/ strapped packs
 - (i) pallet stacking and storage
- QC's will receive signed sheets, sections, collated sets and finished books back from machine operators as soon as they have completed their part of the job. They will be expected to file and keep these for 3 months against quality complaints.
- QC's will also be responsible for keeping a detailed daily record of any quality problems encountered on a *Quality Assurance Sheet*, including the following details:
 - the book title
 - date
 - page numbers / section number
 - machine
 - operator
 - quality problem
 - action taken to solve the problem
 - any significant loss of machine time.
- QC's will meet with the Production Director at regular fortnightly Production Meetings with their *Quality Assurance Sheets*. These should be used as a basis for discussion of any quality issues which have arisen over the previous two weeks.

It is worth noting that QC's will require substantial shelf space in their offices for signed samples, and a basic filing system to keep the signed control cards.

Machine Operators

- Machine Operators (the person charged with the correct running of his/her machine) will be responsible for
 1. Obtaining a signature from the QC for each new film flat, plate, sheet, section etc,
 2. Using the signed copy as a constant reference for maintaining the agreed quality during the production run
 3. In the event that quality falls below the level shown on the signed sheet or section, and that the operator cannot himself solve the problem, the QC should be called immediately
 4. Completing a detailed *Quality Control Card* (see sample set in Appendix) to show that he has carried out all required quality checks, and taken responsibility for them.

4 OTHER QUALITY CONSIDERATIONS

4.1 Materials

The Quality Assurance System is designed to make the productive staff at JEMC quality conscious, and to be aware of their ability to raise quality standards throughout the plant. However, there is a limit to the quality that can be achieved with poor materials, and equal emphasis needs to be placed on a serious attempt to address this problem.

With the installation of a veritable laboratory of sophisticated paper testing instruments, and with the necessary training in its use, JEMC are now well equipped to begin serious negotiations with their two principal paper suppliers: Everest and Brikuti. The press-room is experiencing constant problems in running machines correctly due to poor and inconsistent paper supply. It is very clear that the suppliers are exercising little if any quality control in the manufacture of papers supplied: serious variations in paper colour, surface, weight and thickness are an everyday occurrence, and militate against any serious attempts to raise quality standards. The same is true for cover boards.

Given the fact that JEMC are the single largest client for both companies, there seems no reason why severe pressure should not be brought on both companies to improve their performance.

This may also be an opportune time for JEMC to consider buying better materials at a slightly higher price, while saving more than the price difference by increased running speeds on the presses, and less down-time (fewer stoppages on press). The added bonus is that JEMC will end up with a higher quality product.

Similar considerations apply to ink, glue, strapping tape and other supplies which suffer from sliding quality standards, and depart progressively from original samples supplied.

4.2 Waste Paper Disposal

Proposals were made in my last report for a cheap but effective means of keeping work-areas free of waste paper and trimmings. Mobile tubs alongside all major machines to avoid any paper being found on the floor would help in the efficiency of the plant, its cleanliness and is an integral part of any quality based system.

A further development of this proposal is to purchase a simple (manual) paper compressor, which condenses waste paper into a comparatively small bale with wire strapping. This has several advantages:

- The waste paper takes up a relatively small area,
- It is easily moved by fork-lift truck
- It will not blow about in windy weather
- It remains relatively dry in rain (outside of the Monsoon)

- It may be possible to arrange a better price with the paper company who buys the waste paper

4.3 Machine Maintenance

A strict maintenance programme needs to be introduced for all machines, but especially for the offset litho presses. They are particularly sensitive to paper dust, and no machine minder should begin printing before the machine has been dusted with a damp cloth. This will avoid many problems created by dust in the ink, fountain solution, plate, blanket and on the printed sheets.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Quality Assurance System

The Quality Assurance System is now complete and ready to launch.

Its success or otherwise now lies with Ram Chandra Silwal and his team of Quality Controllers. Given Ram Chandra's determination to improve the efficiency of the plant and to upgrade printed quality, the consultant has faith that the Quality Assurance System will be put into operation with immediate effect.

Monitoring the system will be crucial to its development and to its integration in an overall management strategy, a strategy which JEMC will require if it is to expand its production capacity, and raise its quality and efficiency standards.

5.2 Management Training

It is to be re-emphasised that, once the quality control system becomes fully operational, and is judged to be running successfully, 8-10 carefully selected members of staff directly involved in its implementation, should be sent for special training.

This should be for a period of several weeks with a printer in Singapore who is already running similar control systems. Given the practical difficulties in releasing key workers, it may be advisable to send them in two separate groups so that they are not all away simultaneously.

Although this lies outside the immediate DANIDA project, it is central to the success of quality assurance, and needs to be implemented within the first half of 2001.

5.3 Items awaiting implementation from September 2000 Report

Pre-press

Provision of the following items:

1. Supply, installation and training for imagesetter.
2. Laser printer (A4) for outputting reproduction-quality text and line illustrations in hard copy form.
3. Imposition software to produce imposed film from the imagesetter ready for final stripping and plate-making
4. Air conditioning for the pre-press computer room
5. Self-closing doors for entrance to the computer room to maintain an ambient temperature and to exclude dirt and dust.
6. Closer liaison with the PPC with a view to an understanding of the digital developments at JEMC and the services they can offer

b) Packing

Double-walled corrugated cartons for all future durable textbooks.

c) Waste Paper

A comprehensive system of mobile waste-paper containers at all points where waste paper is created. This is crucial for health and safety, and for the general efficiency of the plant. In addition, a compact waste paper baler is required for ease of handling and environmental reasons.

6

NEXT STEPS

- a) 2-3 week Consultancy end February/early March 2001
 - to ensure that Quality Assurance System has been correctly installed, and is operating correctly at all levels

- b) 2-3 week Consultancy April/May 2001
 - further monitoring at the peak of the production season when quality assurance will be under maximum pressure by the speed and weight of work for the coming academic year.

THE QUALITY ASSURANCE SYSTEM
CHECK POINTS

Pre-press

- CRC to be checked carefully for accuracy and completeness – screen tints in particular need to be examined under a minimum 15x magnifying glass.
- Disks received need to be checked on screen to ensure that they correspond in every way with the hard-copy print-out supplied.
- Film from the imagesetter must be checked for completeness, consistent density and (if imposed) correct imposition
- If more than one colour is involved (e.g.covers) a proof should be taken on the colour printer for checking correct colour separation and positioning.
- A *Quality Control Card* should be completed before the CRC or film is sent to the camera or platemaking departments.

Film Preparation

- Check CRC for image quality, completeness and accuracy
- Check film for consistent and correct density
- Check film for scratches or blemishes
- Check film for completeness and accuracy against CRC or hard-copy printout
- Check imposed flats for accuracy (squareness and positioning)
- Check that section marks have been correctly inserted NB for sewn books these should be no wider than 5mm
- Check covers are correctly positioned for spine width and bleed
- Complete *Quality Control Card* before sending film flats for platemaking

Platemaking

- Check imposed flats are clean and without blemish or scratches
- Check that new developer is used in the automatic plate processor after a maximum of 40 plates have been processed
- Check finished plates for scratches, missing image areas, even tint screens, extraneous dust or dirt marks
- Complete *Quality Control Card* before plates are sent to the printing press

Printing

- Check plates for serious scratches or other marks which will transfer to the printed sheet. If these are found, ask for a remake of the plate and note on the *Quality Check Sheet*. Move on to the next plate available

- Check paper quality and condition. If the condition of the paper is such as to seriously affect machine speed or accuracy, call the Quality Controller, and enter on the *Quality Check Sheet*.
- When machine make-ready is complete, the following items need to be checked:
 - *Correct imposition when folded*
 - *Pages square to sheet*
 - *Correct ink density (minimum quantity of ink required to give a solid image)*
 - *Screen tints clean with no 'filling in'*
 - *No extraneous marks or scratches inside the trim area*
 - *When 'backed up' (printed both sides) pages and folio numbers should fall exactly on the same position as the relevant page on the reverse of the sheet*
- After these checks, take pass sheet to the Quality Controller for checking (same checks as above) and signature
- The signed sheet should be kept alongside the press for reference throughout the run
- The operator should check every 400 sheets against the signed pass sheet
- Any sheets which fall below the agreed quality level (the signed pass sheet) should be treated as waste and removed from the printed sheet pallet
- If problems occur on press which involve more than 10 minutes lost machine time, this should be noted by the operator on the *Quality Control Card*.
- On completion of the job, the signed press sheets should be taken to the Quality Controller for safe-keeping.

Binding

FOLDERS

- Check sheet has been correctly imposed (correct page sequence)
- Check all folds are absolutely square
- Check that there are no top corner creases – larger perforations may be required
- Reject any obvious waste sheets left in the printed sheet stack
- After final make-ready, take folded section to Quality Controller for signature
- Keep signed signature by folder until job is complete, when it should be returned to the Quality Controller

COLLATOR AND SEWERS

- Check carefully that sections are placed in the hoppers in correct sequence
- Reject any obvious poor sections (out of square, badly creased, incorrectly printed etc)
- Check section sequence step-wedge section marks
- Check tightness of sewn book block
- Take sewn book block to Quality Controller for signature

- Keep signed copy by sewer until job is complete, when it should be returned to the Quality Controller

BINDING LINE

- Check adhesive application correct for full length spine and side gluing
- Check that the correct glue temperatures are being maintained (slightly higher for side glue)
- Check hot-melt spine glue film thickness is maintained at 1.0 – 1.5mm thickness
- Check glue application rollers regularly to ensure they are running clean, and apply the full depth of adhesive
- Check three-knife trimmer is allowing correct margins throughout the book and correct cover trim
- Check that there are no visible cut marks on the book edge, indicating that blade requires sharpening
- Take first complete sample after make-ready to Quality Controller for signature
- Keep signed copy by binding line until job is complete, when it should be returned to the Quality Controller

SIDE-STAB BINDING LINES

As above but with following additional items:

- Check that correct weight of wire is used for size of book
- Check that wire is set correctly so that the two ends almost meet but do not overlap
- Check pressure of wire-nip to ensure wire lies absolutely flat on the page, neither digging into it nor sticking up into the cover

STACKING AND STORAGE (standard books)

- Books should be grouped in lots of 30 maximum, strapped with *pre-cut 3mm boards at top and bottom of each lot*
- Books should be reversed in 5's or 10's to allow for the 'swell' of the book spines
- When stacked, each layer should be exactly even in height, and should be keyed to provide maximum stability (*see diagram*)
- When stacked, the pallet should be absolutely solid, with no spaces between groups of books, and no books protruding beyond the area of the pallet
- A thick, clean sheet or board should be placed on the pallet at the base of the stack, and one over the top in order to keep books clean
- The maximum height of the stack (excluding the pallet) should be **one metre**
- If it becomes necessary to double-stack pallets, a solid wooden board must be placed on top of the first pallet before the second one is placed in position

STACKING, STORAGE AND PACKING (durable books)

- Books should be reversed in 5's to allow for the 'swell' of the book spines
- Books should be shrink-wrapped in lots of 15 minimum
- Shrink-wrapping should be tight and fully sealed
- Four shrink-wrapped packs should be placed in custom-made cartons (to fit the book format) so that there is no movement of packs during transit
- Ensure cartons are sealed with tape top and bottom
- Attach labels with title, grade and quantity to each carton
- The maximum height of the stack (excluding the pallet) should be **one metre**
- If it becomes necessary to double-stack pallets, a solid wooden board must be placed on top of the first pallet before the second one is placed in position

QUALITY CHECK SHEETS

These sheets are for the use of machine operators throughout the plant.
The only exception is the Quality Assurance Sheet (next page)
Which is solely for the use of the Quality Controller.

They are to be used to ensure that full quality checks are carried out before each successive stage of the book production process is undertaken.

They will also be used as a record of quality checks made on each title, so that they are available for reference in the event of subsequent quality problems.

They are also designed for use at the fortnightly Quality Control Meetings
if required

Quality Assurance Sheet
QUALITY CONTROLLER

Date	
Book Title	
Section / page numbers	
Operator	
Machine	
Quality Problem	
Action taken	
Loss of machine time (over ten minutes)	
Other observations	
Signed (Quality Controller)	

Operator's Quality Control Card

COMPUTER / IMAGESETTER

Date			
Book Title			
Section / page numbers			
CRC accuracy completeness screen quality			
DISK Checked against hard- copy – OK?			
FILM - text Density Accuracy Completeness			
FILM – cover Density Accuracy Completeness			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

FILM PREPARATION

Date			
Book Title			
Section / page numbers			
CRC accuracy completeness screen quality			
FILM – TEXT Check against CRC Density Accuracy Completeness			
FILM – COVER Density Accuracy Completeness			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

PLATEMAKING

Date			
Book Title			
Section / page numbers			
IMPOSED FLATS Clean Blemishes or scratches Correct imposition			
PLATES Clean Blemishes or scratches Correct density Good screens			
PLATE DEVELOPER Check all materials			
OTHER			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

PRINTING

Date			
Book Title			
Section / page numbers			
Machine			
PLATES Scratches or other marks			
PAPER Quality Condition			
MAKEREADY – check Imposed sheet (fold) Pages square to sheet Ink density – same both sides Screen tints Accurate backup Dirty marks or scratches			
Loss of machine time (if over ten minutes)			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

FOLDING

Date			
Book Title			
Section / page numbers			
Machine			
IMPOSITION			
SQUARE TO SHEET			
TOP CORNER CREASES			
OTHER			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

COLLATING

Date			
Book Title			
Section / page numbers			
Machine			
SECTION SEQUENCE			
FAULTY SECTIONS			
STEP-WEDGE SECTION MARKS			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

SEWING

Date			
Book Title			
Section / page numbers			
Machine			
SECTION SEQUENCE			
FAULTY SECTIONS			
TIGHT SEWING			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

BINDING- SEWN BOOKS

Date			
Book Title			
Section / page numbers			
Machine			
ADHESIVE Full length of spine Full length of sides Spine glue temperature Side glue temperature Spine glue thickness Side glue thickness			
COVERS Scored 4 scores Square to book Spine correct position Correct bleed 3 edges			
THREE KNIFE TRIM Correct trim Blades sharp			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

BINDING- SIDE-STABBED BOOKS

Date			
Book Title			
Section / page numbers			
Machine			
SIDE STAB Correct wire weight Correct wire setting			
ADHESIVE Full length of spine Spine glue temperature Spine glue thickness			
COVERS Square to book Spine correct position Correct bleed 3 edges			
THREE KNIFE TRIM Correct trim Blades sharp			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

STACKING AND STORAGE (standard books)

Date			
Book Title			
Quantity of books per pallet			
STACKING Strapped max 30 book lots Spines reversed in 5's or 10's Each layer keyed to next layer No spaces between lots Books not overlapping pallet Clean sheet top and bottom Max 1m height (excluding pallet) If pallets double stacked, wooden board on first pallet			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

STACKING AND STORAGE (durable books)

Date			
Book Title			
Quantity of books per pallet			
SHRINK-WRAPPING Spines reversed in 5's or 10's Shrink-wrapped min 15's Shrink-wrapping tight and fully sealed			
CARTONS Cartons made to book format 4 packs of 15 books per carton Cartons tightly packed Each layer keyed to next layer No spaces between lots Books not overlapping pallet Clean sheet top and bottom Max 1m height (excluding pallet)			
Signed (Operator)			
Signed (QC)			

Operator's Quality Control Card

STACKING AND STORAGE (standard books)

Date			
Book Title			
Quantity of books per pallet			
STACKING Spines reversed in 5's or 10's Strapped in lots of 30 max Pre-cut 3mm boards top and bottom of each lot Each layer keyed to next layer No spaces between lots Books not overlapping pallet Clean sheet top and bottom of each pallet load Max 1m height (excluding pallet)			
Signed (Operator)			
Signed (Quality Controller)			