NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
CONTRACTOR QUALITY PROGRAM
FOR PRINTING AND FINISHING
of
DOD
FLIGHT INFORMATION PUBLICATIONS
BOOKS and CHARTS

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Record of Change Notices and Amendments

Amendment/ Change Notice	Date	Effective Date	Remarks

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DOD FLIGHT INFORMATION PUBLICATIONS

BOOKS and CHARTS

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CHAPTER ONE

SYSTEM REQUIREMENTS

SECTION 1

INTRODUCTION AND EXPLANATION OF TERMS

1. Accuracy. Users of this manual are cautioned that accuracy of the information in Flight Information Publications (FLIP) is of paramount importance. Errors incorporated into the FLIP could jeopardize the safety of not only the aircraft, but could also be the primary factor in loss of life. To achieve maximum accuracy in the FLIP products, the contractor's Quality Assurance Program must be organized toward the objective of producing an error-free product.

2. Concepts and Policy. The guidance contained in this Contractor Quality Program for the Printing and Finishing of FLIP (short title, Quality Control Manual) is based upon established Department of Defense (DoD) concepts and policies which provide that:

a. The producer is responsible for the control of product quality and for offering to the Government for acceptance only those products conforming to contractual requirements.

b. The Government is responsible for determining that contractual requirements have been complied with prior to the acceptance of the product.

c. Final product acceptance is the responsibility of the Government.

3. Quality Standards. The Government, via the National Geospatial-Intelligence Agency, hereafter referred to as NGA, has provided quality standards for all products and work phases. They will enable the producer to prevent defects from occurring by conducting Operator Quality Control (OQC) inspections, judging his/her own performance, and taking corrective action, when appropriate, before extensive correction or rework is required.

4. Product Standards. The product standards are identified in the General and Technical Provisions for Printing and Finishing of DoD Flight Information Publications, Books and Charts. These specifications reflect the users' requirements and define the end product. They are maintained current by correspondence and an amendment service. Change Notices and/or Amendments are used to implement changes to specifications pending publication of a new edition.

5. Paper Standards. The Joint Committee on Printing (JCP) has established standards for the complete range of paper types. These specifications include all pertinent physical properties of individual

papers. It is required that all paper being used by contractors meet or exceed these specifications.

6. Process Standards. Standards and tolerances are qualitative values which must be met, within certain limits, for various production processes. No matter how carefully a work function is performed, it can never be exactly duplicated. For this reason, variation must be recognized and when it is, it must be determined how much variation is acceptable and at what point rejection should occur. In other words, the worker must know the tolerance range or how far he/she can deviate from the product standard and still produce an acceptable product.

a. Establishment of Tolerances and Standards. Tolerances and process standards are established by NGA to achieve the product quality required.

b. Scope. Process standards cover all approved production methods and indicate the OQC results required in each phase of FLIP production in order to meet the final product standard. Since process standards are based upon the capability or limitations of the production process, they are subject to change as new techniques are developed or as new equipment and materials are introduced. Many of the standards are defined in numerical terms so that work can be measured by use of one or another of the many measuring devices. Other standards can be measured by comparison with examples.

7. Nonconformance. Nonconformances entail any imperfection, deficiency, flaw, lack of completeness, or other condition caused by the production process when the end product would be at variance with the specifications or standards as established in this manual. NGA is paying for a defect-free product or service. Reasonable tolerance ranges have been established for all production phases. When a departure from specified contract requirement exceeds the tolerance limits in either informational content or workmanship, the product or service is defective and the terms of the contract have been violated. Nonconformances have been classed into three groups and are identified as minor (#1), major (#3) and critical (#6). The class of nonconformance (#1, #3, or #6) assigned is based on the amount/extent of deviation from the established tolerances.

a. Minor Nonconformance: One that does not materially reduce the usability of the unit of product for its intended purpose; is a departure from established standards or specifications having no significant bearing on the intended use or it affects the appearance in only a minor degree.

b. Major Nonconformance: A significant departure from quality standards that could materially reduce the usability of the unit of product for its intended purpose; or is a defect that is a significant deviation from specifications, established standards, or average process capability; or is a nonconformance that materially affects the appearance of the product.

c. Critical Nonconformance: A serious departure from the quality standards that could reasonably cause the users injury, death, substantial economic loss, or mission failure; or a serious departure from specifications, established standards, or average process capability.

d. Definitions.

(1) **AVERAGE PROCESS CAPABILITY**: The quality of production or product expected in consideration of equipment limitations and material variables as established by the equipment manufacturer and the material characteristics.

(2) **MINOR DEPARTURE**: Deviations that could go unnoticed in a quality review performed during OCQ or that would only slightly exceed that considered normal for the process.

(3) **SIGNIFICANT DEPARTURE**: Those nonconformances exceeding a minor classification but not to the extent that they would be classed as a critical nonconformance.

(4) **SERIOUS DEPARTURE**: A deviation that exceeds established tolerances or the expected process capability to such a degree that the work performed would be unacceptable by commercial quality standards.

e. The definition of minor, major, and critical classifications for paper and the assigned demerits for each classification are shown in **Chapter 2, Section 3.**

8. Nonconformance Evaluation Criteria. The overall purpose of the nonconformance evaluation criteria is to provide the contractor and Government personnel a common standard for use in determining the significance of errors. Each criterion includes a list of possible nonconformances applicable to a major phase of FLIP production. The nonconformances have been classified as #1(minor), #3(major) or #6 (critical). They have also been assigned code numbers (seen on most checklists and corresponding "Nonconformance Description" tables in this manual). These code numbers enable greater ease in referencing for records and reports, and for positive identification in conversation or correspondence. It is obviously not possible to predict and classify all defects that can occur during production. Deviations from specifications, standards or process capabilities which have not been classified in this manual must be called to the attention of the Contracting Officer (CO) immediately upon their discovery. A classification will be assigned (based on the severity of the deviation) by the Government, and the CO will notify the contractor as to its disposition.

9. Acceptable Quality Level (AQL). The maximum percent defective (or the maximum number of nonconformances per hundred units) that, for the purposes of sampling inspection, can be considered satisfactory as a process average.

10. Unit of Product. The item inspected in order to count the number of nonconformances or determine if it satisfies the quality standards; a single chart, book, signature, plate, negative, raw material, process,

phase, or operation, a component of a final product, or the final product itself.

11. Inspection. The physical examination of the raw material, data, service, or product by visual observation or tests and measurements to determine conformance to the quality standards.

a. Operator Quality Control (OQC) Inspection. The observations and inspections made by the worker and his/her supervisor during the production of a unit of product. Performed to detect nonconformances at the earliest possible time, and to check those quality characteristics which cannot be suitably checked during the Independent Quality Control (IQC) inspection. This helps to prevent the release of a defective unit of product to the next production operation, phase, or process.

(1) Workers. Conduct routine continuous OQC of their operation, phase, or process.

(2) Inspection/Supervisory Personnel. Conduct progressive inspections during the course of production. These inspections shall be done by someone other than the person who initially performed the work.

b. Independent Quality Control (IQC). Final inspection shall be conducted by Quality Assurance personnel at the conclusion of each major work phase. This inspection is done to insure the integrity of the OQC and serve as certification of the unit of product against the quality standards.

c. Government Quality Control Surveillance Inspection and Government Verification. This is the continuing analysis and evaluation of the contractor's methods, procedures and product verifications which ensures the effectiveness of the contractor's quality control system.

d. Government Right to Inspect OQC Production. The Governemnt reserves the right to conduct OQC inspections at the contractor's facility during all phases of production. Such inspections will not constitute Government acceptance nor will it replace the contractor's responsibility for inspections. The purpose of these inspections is to assist the CO in determining conformance to contract requirements.

12. Inspection Checklists. These checklists are aids in determining the adequacy and accuracy of particular items that shall be complete and correct. Inspection checklists will be used by the contractor for all OQC and IQC inspections. Inspection checklists should be modified whenever new problems are encountered in the production process. The contractor should adopt the most convenient and thorough checklist design for the process involved.

13. NGA Inspection Checklists and All Other Forms. The twelve inspection checklists shown in Annex A (separate MS Excel file) and any/all other forms in this manual may be reproduced and used by the contractor. Checklist 1, 2, 3, 4, 5, 6, 7, 11, and 12 have Code Numbers that correspond to the same numbers found in "Nonconformance

Description" tables in this manual. Checklists and forms may be designed by the contractor, but must include all items required by NGA.

14. Contractor Quality Control System. A system of inspection which assures that all supplies and services submitted to the Government for acceptance conform to contract requirements. This would include products generated or procured from subcontractors or vendors.

15. Contractor Quality Assurance System. A complete system for assuring that supplies and services are produced in accordance with contract requirements. The contractor's quality assurance system is a preventative tool, as contrasted with the contractor's quality control system, which may be an after-the-fact corrective tool. Quality assurance includes, but is not limited to, analysis of the Quality Control system of inspection results and recommendations for improvement in the process that generates the unit of product.

16. Interpretation or Clarification of Quality Control Documents. The contractor shall contact the Program Manager in the event he/she requires clarification and interpretation of any quality control document furnished by the Government for use in this contract.

17. Deviations From Provisions of This Manual. Deviations from the quality control provisions in this manual will be permitted only when approved by the Program Manager.

SECTION 2

QUALITY ASSURANCE REQUIREMENTS

1. SCOPE.

a. Intent. This Quality Control Manual establishes requirements for the contractor's quality assurance program. These requirements pertain to the inspections and tests necessary to assure adequate control of quality throughout all areas of contract performance including, as applicable, the entire process of production. These requirements are in addition to those inspections and tests set forth in subsequent parts of this manual and other contractual documents.

b. Relation to Other Contract Requirements. Compliance with all requirements of the quality assurance program and all detail requirements contained in the contract are mandatory.

c. Conformance. The Contractor's Quality Program shall meet all criteria of the Quality Assurance Program set forth in this manual.

d. Contractor Responsibilities. It is required that the authority and responsibility of those in charge of the design, production, testing and inspection of quality must be clearly identified. The contractor shall provide and maintain a quality assurance program which shall ensure that all products and services submitted to the Government for acceptance conform to contract requirements, whether manufactured or processed by the contractor or procured from subcontractors or vendors. The contractor shall perform or have performed the inspections and tests required to substantiate product conformance to the General and Technical Provisions for Printing and Finishing of DoD Flight Information Publications, Books and Charts. The contractor's quality assurance program shall be documented and submitted with the proposal to the Program Manager for review. The program will be subject to review throughout the life of the contract. Written notice of the acceptability or nonacceptability of the quality assurance program will be furnished by the Government. The contractor shall notify the Program Manager in

writing of any change to his/her approved quality assurance program. Written notice of acceptability must be received from the Government before the contractor can implement any change. The quality assurance program shall also include effective execution of responsibilities shared jointly with the Government or related to Government functions such as control of any Government property and Government source inspection as applicable.

2. Quality Assurance Management.

a. Organization. Personnel performing quality functions shall have sufficient, well-defined responsibility, authority and organizational freedom to identify and evaluate quality problems and to initiate, recommend or provide solutions. Management should regularly review the status and adequacy of the quality assurance program. The term ''quality assurance program requirements'' as used herein identifies the collective requirements of this manual. It does not mean that the fulfillment of the requirements of this manual is the responsibility of any single contractor, organization, function, or person.

b. Initial Quality Planning. The contractor, prior to contract performance, shall conduct a complete review of the requirements of the contract to identify and make timely provision for the special controls, processes, test equipment, fixtures, tooling and skills required for assuring product quality. The initial planning will recognize the need to update inspection and testing techniques, instrumentation and correlation of inspection and test results with manufacturing methods and processes. This planning will provide appropriate review and action to assure compatibility of manufacturing, inspection, testing and documentation processes.

c. Work Instructions. The quality assurance program shall assure that all work affecting product quality will be prescribed in clear and complete documented instructions. The instructions shall ensure inspection and testing of materials, work in process and completed articles as required by this document. Product approval and rejection criteria shall also be provided. The instructions are intended to serve management, inspection personnel, production personnel, and shall be available to all levels of production.

d. Records. The contractor shall maintain and use all records of data essential to the effective operation of the quality control program. These records shall be made available for Program Manager review. In addition, individual records shall be furnished as required in subsequent parts of this quality manual. Records are considered one of the principle forms of evidence of product quality. The quality assurance program shall assure that records are complete and reliable. Inspection and testing records shall, as a minimum, indicate the nature of the observations together with the number of observations made, and the number and type of nonconformances found. Also, records for monitoring work performance and for inspection and testing shall indicate the acceptability of work or products and the action taken in connection with nonconformances. The quality assurance program shall provide for the analysis and use of records as a basis for management action. Contractor and sub-contractor production records of quality

control and inspection shall be retained by the contractor for the period of one (1) year after the completion or termination of the contract.

e. Corrective Action. The quality assurance program shall be designed to promptly detect and correct assignable conditions adverse to quality. Operations which could result in defective supplies, services, facilities, technical data, standards or other elements shall be identified and corrected. The Corrective Action Form, Enclosure 1, has been provided to aid in documenting the analysis. Corrective action shall extend to the performance of all suppliers and vendors and shall be responsive to data and products forwarded from users. Corrective action shall include as a minimum:

(1) Analysis of data and the examination of products scrapped or reworked to determine extent and causes of the defective product;

(2) Analysis of trends in processes or performance of work to prevent nonconforming products; and

(3) Introduction of required improvements and the initial review of the adequacy of such measures. This shall also include the future monitoring of the corrective action taken.

3. Control of Specifications and Changes.

a. Control of Guidance Documents. The contractor shall maintain a procedure which assures that the latest applicable specifications, technical requirements, and contract change information shall be available during inspections performed by the Government. When specifications or changes become effective, the contractor shall assure this information is given to all personnel involved and obsolete information is removed. A means of recording the above actions shall be employed and be available to the Government.

b. Measuring and Testing Equipment. The contractor shall provide and maintain measuring and testing equipment necessary to ensure that materials conform to the technical requirements. In order to ensure continued accuracy, this equipment shall be calibrated at established intervals against certified standards which have known valid relationships to national standards. The contractor’s personnel shall be made available for operation of such equipment for accuracy verification.

c. Use of Contractor’s Inspection Equipment. The equipment which the contractor uses as measuring and testing devices shall be made available for use by the Government when required to determine conformance with contract requirements. If conditions warrant, contractor personnel shall be made available for operation of such devices and for verification of their accuracy and condition.

4. Inspection.

a. Inspection During Manufacture. The contractor shall establish and maintain inspection points in the production process satisfactory to the Program Manager to assure continuous control of quality of the product. An optional quality control system has been developed by NGA which is explained and illustrated throughout this manual. This system is provided in a separate file which includes the FLIP Quality Report and the total system on a process flow chart which the contractor has the option of adopting.

b. Complete or 100% Inspection. Specific phases of the contractor's production process, such as plate making, shall be inspected 100%.

c. Sampling. The contractor may employ sampling inspection on mass production operations, such as printing and finishing, in accordance with applicable military standards and sampling plan (e.g., from MIL STD 105D). If the contractor proposes the use of other sampling plans, they will be subject to the review and approval of the Program Manager. Any sampling plan shall provide valid confidence and quality levels.

5. Government Furnished Property (GFP).

a. Contractor's Procedure for Control of Government-Furnished Property. When material is furnished by the Government, the contractor's procedures shall include as a minimum the following:

(1) Inspection upon receipt for damage in transit, completeness, proper type, and verification of quantities;

(2) Periodic inspection to ensure adequate storage conditions and to guard against damage and deterioration during storage;

(3) Functional testing, either prior to or after installation, or both, as required by contract to determine satisfactory operation;

(4) Protection from improper use or disposition.

b. Damaged Government-Furnished Property. The contractor shall immediately notify the Program Manager upon detection of any Government-furnished material found damaged, malfunctioning or otherwise unsuitable for use. In the event of damage or malfunction during or after usage, the contractor shall determine and record probable cause and necessity for any delays in production. All such incidents of damaged or unsuitable material shall be addressed to the Program Manager by written documentation within ten (10) days after the nonconformances are identified. A copy of all correspondence relating to the faulty GFP shall be retained by the contractor for one (1) year after the completion or termination of the contract.

6. Nonconforming Material. The contractor shall establish and maintain a system for controlling nonconforming material and procedures for identifying, segregating, presenting and disposing of reworked or repaired materials. Rework of nonconforming materials shall be in

accordance with documented procedures acceptable to the Program Manager. The acceptance of nonconforming materials is the Program Manager's prerogative. All nonconforming materials shall be positively identified to prevent use, shipment or intermingling with conforming materials.

7. Sampling Inspection. Procedures used by the contractor to determine quality conformance of materials by sampling will be stated in the contract or will be subject to approval by the Program Manager.

8. Inspection Provisions. Alternative inspection procedures and inspection equipment may be used by the contractor when such procedures and equipment provide the quality assurance required in the contract. Prior to implementing such alternative procedures and equipment, the contractor shall describe them in writing and demonstrate that their effectiveness is equal to or better than the contractual quality assurance procedure. In disputes over whether certain procedures of the contractor's quality control system provide equal assurance, the procedures of this document will apply.

9. Government Inspection at Subcontractor or Vendor Facilities.

a. Government Right to Inspect at Source. The Government reserves the right to inspect at the source, supplies or services not manufactured or performed within the contractor's facility. Government inspection will not constitute acceptance, nor will it in any way replace contractor inspection or otherwise relieve the contractor of their responsibility to furnish an acceptable end product. Government inspections of a subcontractor's plant cannot be used by the contractor as evidence of effective inspection by such subcontractor. The purpose of these inspections is to assist the Program Manager to determine conformance of supplies or services with contract requirements. Such inspections can be requested only by the Program Manager or under his/her authorization.

b. Government Review of Purchasing Documents. All purchasing documents and reference data shall be available for review by the Program Manager to determine compliance with the requirements for the control of such purchases. The Program Manager will provide the instructions for furnishing purchasing documents for Government inspection.

10. Receiving Inspection. Subcontracted or purchased supplies shall be subject to inspection by the contractor after receipt to ensure conformance to contract requirements. The contractor shall be responsible for any corrective action required between the contractor and their supplier.

11. Government Evaluation. The contractor's quality assurance program and materials generated by the program shall be subject to evaluation and verification by the Program Manager. As a result of this evaluation, the Government may request from the contractor documented evidence of corrective action taken as outlined in paragraph 2.e. when nonconforming products are detected. Due to the paramount importance of information

contained in the FLIP products, timely submission of corrective action documentation is essential.

SECTION 3

QUALITY ASSURANCE DESCRIPTION

1. Description Requirements. The contractor may adopt the total quality control/quality assurance system outlined in this manual. Conversely, the contractor may use their own system or develop a new system at their own expense. If a contractor's system is used, it shall meet all quality requirements provided in Section 2. If the contractor elects to use their current system (or develop a new system) they shall submit a written description to the Program Manager for acceptance prior to contract performance. The contractor’s quality assurance program can be disapproved whenever the system’s procedures do not accomplish their objective.

2. Quality Control/Quality Assurance System. This system consists of 12 checklists (Quality Control)(Annex A, separate MS Excel file); a Production Flow Process Chart (Quality Assurance) (Annex B, separate file); and the quality requirements of this manual. The contractor may adopt this NGA developed system by signing the Quality Assurance Program Requirements portion of the Production Flow Process Chart. When a

contractor chooses not to adopt the NGA system, it is required they develop a Company Quality Program manual. (See paragraph 3.c., this section.)

3. System Development and Documentation. The following data is furnished as additional guidance in developing and documenting an acceptable quality assurance program:

a. Documenting Company Policy on Quality. It is suggested that the company policy on quality be formally documented as the first step in developing a quality assurance program. The following statement of policy is a good example:

''It is the policy of BLANK COMPANY to produce products on schedule with quality that shall satisfy our customer's requirements and enhance the integrity of our name. Quality shall be controlled by modern quality control principles and practices. This system shall provide for the identification and correction of basic causes of nonconformances in our products. It shall involve continual surveillance of both our in-house and subcontractor or vendor quality control appraisal systems; preparation and maintenance of operating procedures and quality standards applicable to specific products; analysis of nonconformances; and initiation of corrective actions when nonconformances are discovered.''

b. Implementing Company Policy on Quality. The formal statement of policy establishes a quality goal. It then remains to implement this policy through the media of written procedures or instructions so that all who perform work functions will clearly understand what is required of them.

c. Company Quality Program Manual. It is required that the Contractor Quality Program meet all of the requirements of the National Geospatial-Intelligence Agency Contractor Quality Program for Printing and Finishing of DoD Flight Information Publications Books and Charts as a minimum. If the contractor decides to implement their own quality system they shall develop a quality control/quality assurance manual. This manual will include their flow process charts, policy, responsibilities, charts standards, techniques, procedures, inspection checklists, nonconformance criteria, sub-contractor quality interface, and other general information concerning the quality program of the company.

d. Further Information and Guidance. If further information or guidance is required in documenting or developing the quality assurance program, inquiries should be directed to the Program Manager.

CHAPTER TWO

FLIP PHOTO SERVICES, PRINTING AND FINISHING

SECTION 1

GENERAL

1. Purpose and Scope. This part of the manual supplements Chapter One and provides additional details concerning contractor responsibilities in managing an effective system of quality control for printing and finishing of FLIP products. In this section basic information is being provided on Key Inspection Stations, Sampling, Inspection, Records, and Acceptance Criteria. Detailed guidance on the quality control of each major production operation will be found in the chapters that follow.

2. Basic Concepts. The quality control system used in photo services, printing and finishing phases of the contract must insure that:

a. The product is produced with raw material (film, paper, ink, adhesive, etc.) which has been certified as meeting the specifications in the General and Technical Provisions for Printing and Finishing of DoD Flight Information Publications, Books and Charts.

b. The product is in conformance with requirements of the contract.

3. Inspection Stations. The contractor shall establish and maintain a system of inspection at key points in the printing and finishing processes. The list of inspection stations shown in Figure 1 are key points in the inspection system. They shall be installed and maintained as an integral part of the production process. Omission of one or more stations is, of course, permissible when a process is not part of an individual product requirement.

* STATION	PRIMARY QUALITY CHARACTERISTICS
Raw Materials	Equal or exceeding specifications
Incoming Reproducibles (Negs/Positives)	Count and condition
Photo Services	Registration, compositing, completeness
Plate Making	Registration, compositing, completeness
Printing	Color, registration and litho quality
Trimming	Size and appearance
Folding	Fold and size
Collation	Page sequence and insertion
Binding	Staple placement and adhesive bind quality
Drilling	Hole placement, count and diameter

* Consolidation of Stations
Inspection stations may be consolidated if physical location & processes being used by the contractor warrant the consolidation; however, all consolidations must be pre-approved by in writing by the Program Manager.

Figure 1. Inspection Stations

4. Sampling. The quality level of production lots in printing and finishing processes shall be determined by use of sampling procedures. Sampling procedures shall not be used in the inspection of negatives, positives or plate making phases of production. Two separate sampling plans have been devised for printing and finishing inspection operations. They are known as ''normal sampling'' level and ''reduced sampling level''. During initial phases of the contract, the contractor shall use normal sampling. At the request of the contractor, and at the option of the Government, sampling may be reduced when the contractor's performance warrants a reduction in inspection. This option will only be exercised after quality acceptance has been given on the second issue produced and a review of the contractor's ability to meet the contract quality requirements indicates that they have performed satisfactorily.

The contractor, at the option of the Government, may be returned to normal sampling any time the product quality does not meet requirements.

a. Sample Selection and Identification. Samples shall be selected to reflect the quality of the production lot. Each sample and the area from which it was extracted shall be identified so that each can be related to the other in case corrective action is required. The production lot shall be identified so that if nonconformance samples are discovered, the defective lot or sublot may be isolated, inspected, and corrected or discarded.

b. Sample Retention. Samples pulled for the inspection of printing and for binding adequacy tests shall be retained until replaced by samples from the succeeding issue. All other samples may be returned to production after they have been inspected and all quality data recorded as a result of the inspection.

5. Inspection. The contractor shall perform production and quality assurance surveillance inspections as described in Chapter 1, Section 1, paragraph 11, for each major operation of the production process. They shall also use inspection checklists as noted in Chapter 1, Section 1, paragraph 12. Each sample shall receive 100% inspection for the process involved. Inspection operations shall be scheduled so that ample time will be available if corrective action is required. Materials and workmanship shall be evaluated to assure that they conform to the requirements of the general specifications, and also the standards and tolerances shown in the sections that follow. Items processed in the following phases of production require complete or 100% inspection:

a. Receipt of raw materials
b. Receipt of negatives or positives
c. Photo Services
d. Platemaking

6. Inspection Records, Quality Reports and Raw Materials Reports. Records and reports submitted by the contractor shall be in accordance with the provisions of Chapter 1, Section 2, paragraph 2d and the following:

a. Inspection Records and Quality Reports.

(1) Quality reports are due at NGA seven (7) calendar days after the date of distribution (last of products shipped).

(2) A separate inspection report shall be submitted for each volume, each Book, each Chart, etc. Except when more than one product is printed on the same sheet of paper (i.e., 2 Charts) the report shall, in this case, be made for the sheet until they are cut apart. Regarding inspection samples, each pass through a press shall be reported separately. Reports for covers produced concurrently shall be attached to the respective product report. Reports shall contain, as a minimum, the information noted below:

(a) Contractor's Name.

(b) Effective Date of Product.

(c) Identification of book or chart inspected by number (e.g. Vol 1), and /or title (e.g., US Terminal Low)

(d) Name of the contractor, subcontractor, or element performing the inspection.

(e) Inspector's ID.

(f) Date of inspection.

(g) Quantity produced of the inspected product.

(h) Number of samples inspected and sample frequency.

(i) The quantity of nonconformances in each classification for each inspection station. Only report product nonconformances, exceeding the AQL, which were distributed.

(j) Description of the signature or form with respect to the number of pages or charts included and a detailed description of the pages or charts that were found to be in nonconformance.

(k) Explanation of all nonconformances falling into either major or critical classification for each inspection station.

(l) Provide a detailed description of what was done to correct all #3 and #6 defects which exceed the AQL. Do not just report Corrective Action Taken (CAT). Utilization of Enclosure 1 will help in completing this analysis. This shall include a detailed description of what was done to correct the nonconformance and to prevent it or similar nonconformances from recurring.

(m) Identification of each color inspected, shown in individual lines or columns, and identified PMS ink number.

(n) Percent defective for each production operation.

(o) Name of person approving inspection.

(p) Action taken when critical defects are discovered.

(q) Whether inspection in OQC, or IQC.

(r) Description of raw material, purchase order number, lot number and date of purchase.

(s) Production lot size for determining adhesive bound samples. (This quantity includes all products adhesive bound in a production cycle and may cover one or more contracts.)

(3) A sample NGA Quality Reporting form is shown in Figures 4a, 4b, 5a and 5b. This form ''Quality Report - Printing and Finishing Operation'' has been included in this manual as an aid in preparing the required inspection records and reports. Each section of this form deals with a category of information. Portions of the form and detailed explanation regarding use are contained in this and succeeding chapters. If the contractor elects to use this form in accordance with the provisions of Chapter 1, Section 1, paragraph 13, NGA will furnish a suitable reproduction copy.

(4) The heading portion of the Quality Report shall be filled in as illustrated in Figure 2. An explanation of the specific information required is as follows:

(a) Date of Report. If the form is used in the contractor's plant for recording on site inspection data, record the date that the inspections are made in this block. If it is a final Quality Report to be submitted to the Government, record the date that the report is finalized by the contractor's Quality Assurance Staff.

(b) Jacket Number. Record contractor's job number used to identify job in contractor's Production Control System.

(c) Contractor and/or Sub-Contractor/Location. Where more than one plant is involved in a contract, show the plant's location.

(d) Job Identification and Effective Date. Record the title of the item or items being produced and the Effective Date.

(e) Quantity. Enter the highest quantity ordered. If the production is a reprint or remake action or an additional quantity, show the additional quantity produced for which the report applies.

(f) Audit by. Enter name of contractor's inspector.

(g) Production Lot Size. Products produced in a continuous or uninterrupted operation using the same materials.

(h) Approved by. Name of the individual who is responsible for overall quality assurance should be entered in this space.

(5) Forward one copy of the letter of transmittal and Quality Report to the Program Manager.

THE FOLLOWING IS ONLY THE HEADING SECTION OF THE FULL NGA QUALITY REPORT

	Date of Report	Jacket #

QUALITY REPORT - PRINTING AND FINISHING OPERATION		4-26-10	3674
Contractor and/or Subcontractor Litho Printing	Job Ident & Effective Date US Term Vol 1, Form 1 6 MAY 10	Quantity 14,500	Audit By S. MARK
Location ST. LOUIS, MO	Contract No. HM1653 05 D0002	Prod. Lot Size 105,000	Approved By C. DAVIS

NOTE: For all #3 and #6 nonconformances exceeding the AQL (Acceptable Quality Level), provice the following information in the space provided at rear of summary sheet and the respective inspection checklist involved:

* Signature of occurrence / location (if applicable)
* Page numbers involved
* Nonconformance description
* Corrective action taken

Figure 2. Completed Heading Portion of the NGA Quality Report.

(6) The Certified Raw Materials Used portion of the Quality Report shall be used as shown in Figure 3. An explanation of information required is as follows:

Paper, Ink, Film, and Adhesive. The yes/no conformance data recorded in the Inspection Checklist #1 for Raw Materials shown in Annex A (separate MS Excel file) can be recorded directly onto the Quality Report. The format and data requested on the Quality Report and this #1 Inspection Checklist are similar for ease of recording. The contractor is required to maintain current manufacturers certifications/test results.

THE FOLLOWING IS ONLY THE RAW MATERIALS SECTION OF THE FULL NGA QUALITY REPORT :

CERTIFIED RAW MATERIALS USED		YES	NO
Film :	Meets requirements based on certification and / or test results.	Y	
Paper :	Meets requirements based on certification and / or test results.	Y	
Ink :	Meets requirements based on certification and / or test results.	Y	
Adhesive :	Meets requirements based on certification and / or test results.	Y	

Figure 3. Completed Certified Raw materials Used Portion of the NGA Quality Report.

7. Acceptance Criteria.

a. Quality Acceptance. Acceptance for quality shall be in accordance with the AQLs shown in Figure 6. Products containing nonconformances beyond the AQLs may be accepted at the option of the Government at a reduced cost which will be negotiated by the Contracting Officer.

b. AQL Adjustment. In return for conscientious efforts to eliminate nonconformances and control quality, resulting in the production of products that are consistently better than the AQL, the AQL is adjusted by the Program Manger or Contracting Officer to benefit the contractor.

Adjustments are taken into consideration when final acceptance is made. The rules for adjustment are as follows:

(1) If the AQL allowed for #6 nonconformances is not reached, the unused portion may be added to the AQL allowed for #3 nonconformances. The increased AQL for the #3 nonconformances is the adjusted AQL.

(2) Unused differences are never shifted from a #3 to a #6.

c. Critical Nonconformance Discovered Before Distribution. The contractor shall immediately notify the Program Manager when a #6 nonconformance is discovered prior to distribution, for which corrective action by the contractor is not anticipated. The Program Manager will then decide upon a desirable disposition for the nonconformed products. Products with known #6 nonconformances must never be distributed, unless the action has been directed by the Program Manager.

d. Critical Defect Discovered After Distribution. In the event products have been distributed and the contractor discovers that #6 nonconformances exist in the products, he/she shall immediately notify the Program Manager. The #6 nonconformances shall also be recorded in the quality report or an amendment thereto.

	Date of Report	Jacket #

QUALITY REPORT - PRINTING AND FINISHING OPERATION

Contractor and/or Subcontractor	Job Ident & Effective Date	Quantity	Audit By
Location	Contract No.	Prod. Lot Size	Approved By

NOTE: For all #3 and #6 nonconformances exceeding the AQL (Acceptable Quality Level), provide the following information in the space provided at rear of summary sheet and the respective inspection checklist involved:

* Signature of occurrence / location (if applicable)
* Page numbers involved
* Nonconformance description
* Corrective action taken

CERTIFIED RAW MATERIALS USED

		YES	NO
Film :	Meets requirements based on certification and / or test results.		
Paper :	Meets requirements based on certification and / or test results.		
Ink :	Meets requirements based on certification and / or test results.		
Adhesive :	Meets requirements based on certification and / or test results.		

INCOMING REPRODUCIBLES (NEGATIVE OR POSITIVE)

OQC # Inspected	OQC Total Nonconformances	OQC Total % Nonconformances	IQC # Inspected	IQC Total Nonconformances	IQC Total % Nonconformances
________	#3______ #6______	#3______ #6______	________	#3______ #6______	#3______ #6______

PHOTO SERVICES

OQC # Inspected	OQC Total Nonconformances	OQC Total % Nonconformances	IQC # Inspected	IQC Total Nonconformances	IQC Total % Nonconformances
________	#6______	#6______	________	#6______	#6______

PLATEMAKING

OQC # Inspected	OQC Total Nonconformances	OQC Total % Nonconformances	IQC # Inspected	IQC Total Nonconformances	IQC Total % Nonconformances
________	#3______ #6______	#3______ #6______	________	#3______ #6______	#3______ #6______

PRINTING

FORM # ____________________

OQC		IQC	
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ____________________

OQC		IQC	
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ____________________

OQC		IQC	
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ____________________

OQC		IQC	
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ____________________

OQC		IQC	
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

Figure 4a. Quality Report - Printing and Finishing

REMARKS:

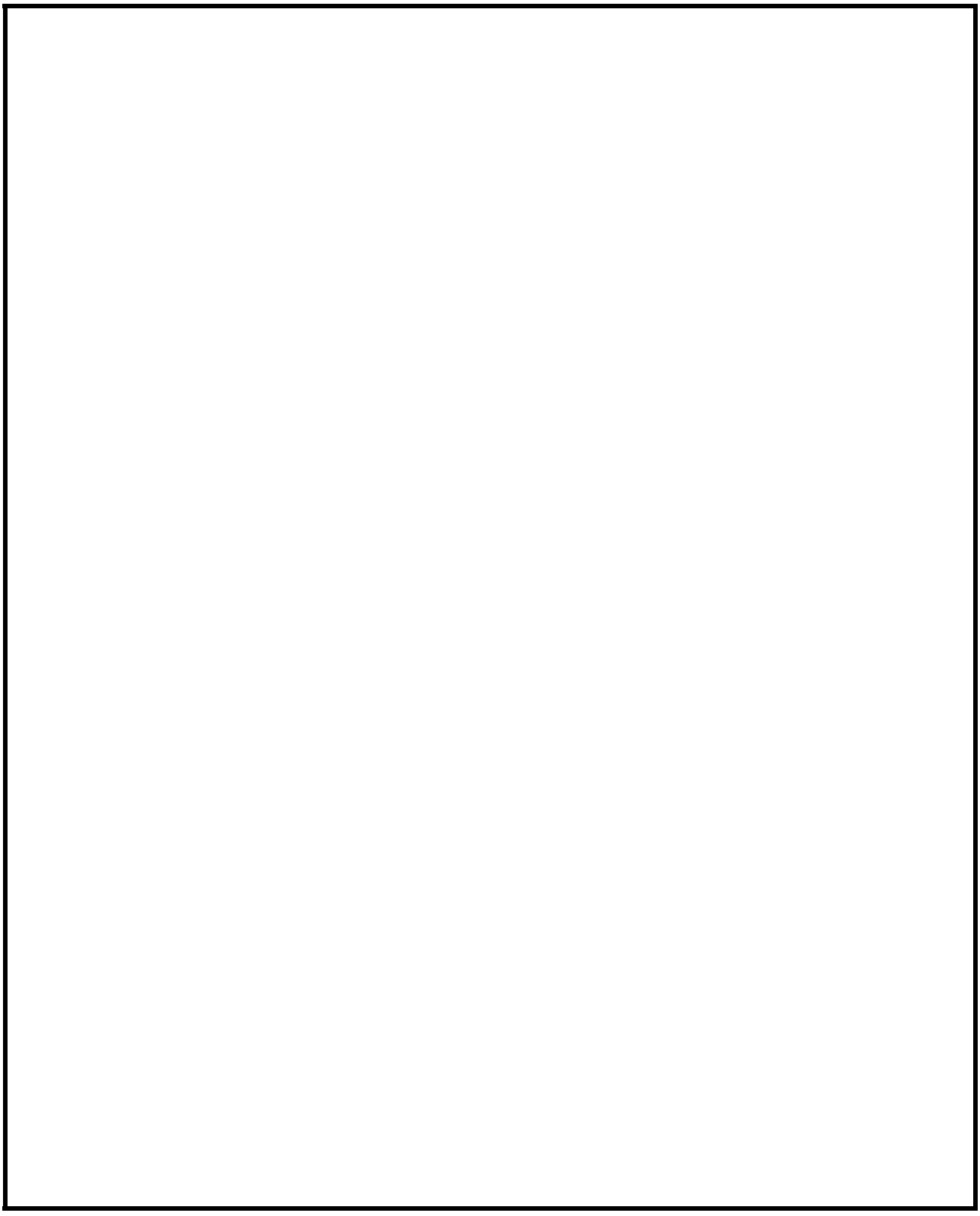

Figure 4b. Quality Report - Printing and Finishing

QUALITY REPORT - PRINTING AND FINISHING OPERATION (*CONTINUED*)

Job Ident & Effective Date	Quantity	Audit By
Product Lot Size	Approved By	

NOTE: For all #6 nonconformances and those #3 nonconformances exceeding the AQL (Acceptable Quality Level), provide the following information in the space provided at rear of summary sheet and the respective inspection checklist involved:

* Signature of occurrence / location (if applicable)
* Page numbers involved
* Nonconformance description
* Corrective action taken

PRINTING *(CONTINUED)*

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

PRINTING

FORM # ______

	OQC		IQC
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

Figure 5a. Quality Report - Printing and Finishing

OQC			TRIMMING	IQC		
#	Total	Total		#	Total	Total

Inspected _____	Nonconformances : # 3____ #6 ____	% Nonconforming : # 3 _____ # 6 _____	Inspected _____	Nonconformances : # 3____ #6 ____	% Nonconforming : # 3 _____ # 6 _____
OQC	**FOLDING OFF-PRESS**				IQC
# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____	# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____
OQC	**COLLATION**				IQC
# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____	# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____
OQC	**STAPLING**				IQC
# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____	# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____
OQC	**DRILLING**				IQC
# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____	# Inspected _____	Total Nonconformances : # 3____ #6 ____	Total % Nonconforming : # 3 _____ # 6 _____
Operator Quality Control	(OQC)	**FLEX AND PULL**		Independent Quality Control	(IQC)
FLEX # OF REJECTS _____ % REJECTS _____	PULL # OF REJECTS _____ % REJECTS _____		FLEX # OF REJECTS _____ % REJECTS _____	PULL # OF REJECTS _____ % REJECTS _____	
OQC		**TEMP. AND THICKNESS**			IQC
TEMP # OF REJECTS _____ % REJECTS _____	THICKNESS # OF REJECTS _____ % REJECTS _____		TEMP # OF REJECTS _____ % REJECTS _____	THICKNESS # OF REJECTS _____ % REJECTS _____	

REMARKS:

Figure 5b. Quality Report - Printing and Finishing

ACCEPTABLE QUALITY LEVELS

PROCESS	PERCENT DEFECTIVE	
	#3	#6
Raw Materials	0%	0%
Negatives or Positives	0%	0%
Photo Services	0%	0%
Plate Making	0%	0%
Printing	3%	1.5%
Trimming	3%	1.5%
Folding	3%	1.5%
Drilling	3%	1.5%
Collation	0%	0%
Binding (Strength of Adhesive Bind)	Per Acceptance Tables	
Binding (Other than Strength of Adhesive Bind)	3%	1.5%

The above AQLs shall be maintained on both normal and reduced sampling. If either sampling indicates the AQL is being exceeded, the contractor shall take whatever corrective action is necessary to bring the production lot within the AQL, including additional sampling, 100% inspection, sorting and / or reworking, if necessary. When computing percent nonconformance, round off to nearest tenth of a percent.

Figure 6. AQLs for Printing and Finishing

SECTION 2

FILM

1. General. If films are used in the production process, they shall be used to produce high quality lithographic press plates for subsequent printing. Following is a list of films that currently meet Government requirements. Equal films by other manufacturers may be used providing they meet acceptable lithographic quality and are interchangeable with present practices and processes.

KODAK	DUPONT	AGFA
Ortho Negative Acting		
Ortho Type 3	CUCF-7, BLF, BLD	HTU-3
Duplicating Film		
LPD	CRR	High Speed Dup
---	PCD	---
Matte Film Negative		
Projection Matte	PFM	---
Matte Film Duplicating		
---	PDM	---
Room Light Speed Films		
Contact Negative Acting		
Versalite QCF	PCHC	---
Matte Film Negative		
---	DXEX 154	---
Matte Film Duplicating		
---	DXEX 153	---
Duplicating Film		
ODF	PCHD	---

SECTION 3

PAPER

1.General. Paper shall be tested to assure that all products are produced from materials of acceptable quality. Raw material certification (test results) from suppliers shall contain data required by this chapter.

2. Sampling.

a. Procedure. Paper shall be sampled in accordance with TAPPI-T400. The TAPPI document is available from the Technical Association of the Pulp and Paper Industry.

b. Sample Size. Sample quantity shall be determined by the lot size of each purchase of a single type, grade, basis weight, thickness and composition. The sample shall be of sufficient size or quantity to perform the tests required for the specific JCP paper.

c. Nonconformance Samples. A sample is nonconformed if the cumulative property tests result in a Product Quality Index (PQI) of less than 70 (see paragraph 6.a. of this section). A lot may be rejected when nonconformance samples(s) equal or exceed the reject number shown in Figure 7.

3. Testing. The testing standards contained in Part 2 of the Paper Specification Standard, published by the Joint Committee on Printing (JCP), Congress of the United States, or an equivalent test procedure shall be used in testing paper. As a minimum, paper shall be tested for each characteristic that is listed in the Nonconformance Criteria contained in paragraph 7 of this section.

LOT SIZE (Roll, Skid, Ream)	SAMPLE SIZE	ACCEPT	REJECT
1	1	0	1
2	2	0	1
3 - 5	3	0	1
6 - 10	4	0	1
11 - Over	5	0	1

Figure 7. Sampling Plan for Paper Tests.

4. Process Standards. The JCP Paper Specification is the process standard for paper. The JCP document to be used shall be the one that is current as of the day of issue of this contract solicitation.

5. Verification of Acceptance. The supplier shall provide the contractor test results that show paper used on FLIP products meets JCP specifications and must include the contract number, JCP specification number, Purchase Order number, Brand and Producer.

6. Evaluation Criteria.

a. Product Quality Index (PQI). The PQI is a system established for accepting or rejecting paper. It is based on a value of 100 for paper meeting all specification requirements. The PQI for a specific paper is 100 minus the sum of all the demerits assigned for deviation from specifications. A numerical value of 70 has been established as the lowest acceptable PQI. Paper having a PQI below 70 is subject to rejection. The PQI for a specific paper is determined by assigning demerits to each nonconformed quality characteristic based on test results. The demerits assigned will vary with the category of nonconformance. A Minor nonconformance will be assigned 4 demerits, a Major nonconformance 12 demerits, and a critical nonconformance 36 demerits. The PQI is determined by subtracting the sum of the assessed demerits from 100.

b. Related Characteristics. If minor or major nonconformances are found in two or more related characteristics, the number of demerits assessed for each nonconformance will be increased to six (6) and eighteen (18) respectively instead of the four (4) and twelve (12) normally assessed. Related characteristics are listed by groups, as follows:

(1)	Folding Strength Stock Tearing Strength	(2)	Finish (Smoothness) Thickness (Caliper)	(3)	Opacity Thickness (Caliper)

7. Nonconformance Criteria. Criteria for establishing the category of nonconformance and demerits is seen in the table at the end of this section. The value quoted (percent or percentage points) is the amount of deviation from specifications.

8. Examples. The following are examples for establishing tolerances and the category of defects.

a. When tolerances are based on percentage points. (Stock)
Example: Spec (100%) 3 = 97%
Over 97% up to 100% cotton/linen fibers =
Minor nonconformance or 4 demerits.

b. When two related characteristics have nonconformances.
(Stock, tearing strength).
Example: Spec (100%) bleached chemical wood pulp
Over 97% up to 100% cotton/linen fibers =
Minor defect.
Spec (tearing strength not less than 40 grams), less than 10% deviation is a Minor defect.
Since these are related characteristics (paragraph 6.b.) they are assessed 6 demerits each.

c. When tolerances are based on percent. (Folding endurance)

Example: Spec (30) x 25% = 7.5
30 7.5 = 22.5
Less than 22.5 Folding Endurance = Critical nonconformance or 36 demerits.

d. When tolerances are based on percent with a built-in ± tolerance. (Thickness)

Example: Spec (.0042 = .0005) x 4%
.0042 x 4% = .000168
Maximum .0042 = .0005 + .000168 = .004868
Minimum .0042 - .0005 - .000168 = .003532
Over .004868 or
Less than .003532 = Critical nonconformance or 36 demerits

CODE	NONCONFORMANCE DESCRIPTION	DEMERITS
	STOCK	
	(Papers required to be free from unbleached or groundwood)	
214-1	Less than 3 percentage points	4
214-2	3 - 5 percentage points	12
214-3	More than 5 percentage points	36
	(Paper required to have not more than specified percentages of Unbleached / groundwood or specified principle fiber content)	
214-4	Less than 5 percentage points	4
214-5	5 - 10 percentage points	12
214-6	More than 10 percentage points	36
214-7	**BASIS WEIGHT** Not as specified	36
	FOLDING ENDURANCE (JCP E40 ONLY)	
214-8	Less than 10%	4
214-9	10% - 25%	12
214-10	More than 25%	36
	THICKNESS (except JCP L20) (Sample Sheets)	
214-11	Less than 4%	4
214-12	4% - 8%	12
214-13	More than 8%	36
	(Except JCP L20) (Variation on individual sheets from one edge to the other)	
215-1	Less than 10%	4
215-2	10% - 25%	12
215-3	More than 25%	36
	OPACITY (White Stock Only)	
215-4	Less than 1.0 percentage point	4
215-5	1.0 - 2.0 percentage points	12
215-6	More than 2.0 percentage points	36
	WET TENSILE STRENGTH (JCP E40); STIFFNESS (JCP A72); BURSTING STRENGTH, WATER RESISTANCE (JCP E40)	
215-7	Less than 10% under specification tolerance	4
215-8	10% - 25% under specification tolerance	12
215-9	More than 25% under specification tolerance	36
	FINISH	
	(Smoothness) (JCP E40 Only)	
215-10	Less than $\pm$ 10% deviation from specification tolerance	4
215-11	Between $\pm$ 10% and $\pm$ 25% deviation from specification tolerance	12
215-12	Over $\pm$ 25% deviation from specification tolerance	36
	ACIDITY (P H VALUE)	
215-13	Less than 0.3% PH unit	4
215-14	0.3% - 0.5% PH unit	12
215-15	More than 0.5 PH unit	36
	All Other Measurable Characteristics	
215-16	Insignificant nonconformance	4
215-17	Significant nonconformance	12
215-18	Excessive nonconformance	36
	Judgment Characteristics	

215-19	Insignificant nonconformance	4
215-20	Significant nonconformance	12
215-21	Excessive nonconformance	36

SECTION 4

INK

1. General. Each lot of ink shall be sampled, tested and certified prior to use in the production of products under this contract. Raw material certification (results of tests) shall contain data required by this chapter.

2. Sampling. A minimum of one random sample shall be selected from each lot of ink. This sample shall reflect the quality of the entire lot.

3. Testing. The ink sample shall be subjected to the following tests:

a. Color. The color correctness of the ink sample shall be determined by test procedures in which a Gretag/Macbeth, model Eye-One Spectrophotometer, or a X-RITE 500 Spectrodensitometer, or equivalent is used.

(1) Both the Gretag/Macbeth Eye-One Spectrophotometer and X-RITE 500 Spectrodensitometer provide digital readings for L, a + b factors. These factors are plotted on a diagram which then shows relationship between a sample and a standard. The L values are plotted on a white/black axis, the a values on a green/red axis and the b values on a yellow/blue axis.

(2) Specification tolerances for testing are given in the General and Technical Provisions for Printing and Finishing.

b. Ink Manufacturers who do not have the Gretag/Macbeth Eye-One or X-RITE 500 must correlate their instruments to these instruments.

c. Color Test Prints. A color print may be made on any standard lithographic press. The press shall be absolutely clean. A proper ink/water balance must be obtained and the inks applied with an ink film thickness of .00020 to .000275. Ink film measurements may be made with a Gardner Wet Film Thickness Gauge or equivalent. The print shall be made on JCP/E40 paper or equivalent. The print shall be 1 ½'', x 3'' or larger and be free from imperfections, blemishes, dirt, hickeys, etc.

4. Certification of Test Results. Test results shall show the quality for each characteristic cited in the specification for the ink. All deviations from these standards shall be evaluated by use of the Nonconformance Evaluation Criteria contained in paragraph 5. Other additional selected data, including Purchase Order Number must be furnished.

5. Nonconformance Evaluation Criteria.

CODE	NONCONFORMANCE DESCRIPTION	CLASS

COLOR		
219-2	Exceeding Tolerances	6

SECTION 5

ADHESIVE

1. General. Each lot of adhesive shall be sampled, tested and certified prior to use in production of products under this contract. Raw material certification (test results) shall contain data required by this chapter.

2. Sampling. A minimum of one random sample shall be selected from each lot of adhesive. This sample shall reflect the quality of the entire lot.

3. Testing.

a. Cold Test. Materials needed for this test are five adhesive strips, a temperature controlled environment, a thermometer and a block of wood. The adhesive strips should be .020'' thick, 3'' long and .5'' wide. The block of wood should be approximately .25'' thick, 1.5'' wide and 8 long. To make the test, the wood and the thermometer shall be placed in the temperature controlled environment and the temperature reduced to +22 degrees F. (temperatures below +22 degrees F. are acceptable; however, temperatures above +22 degrees F. will invalidate the test). When the temperature reaches the required reading, place the five adhesive strips across the wooden block so that the ends extend beyond the side edges of the wooden block. The strips shall be left in the controlled environment for a minimum of three hours. With the strips in the controlled area, and without handling, perform the snap test by encircling a strip from each end with the thumb and middle finger. Slowly close the thumb and finger until they simultaneously touch the ends of the adhesive strip. Quickly clench the thumb and finger to bring the ends of the adhesive strip together. Then using the other hand, apply pressure at the point of bend, pressing the strip tightly together. If the adhesive breaks, it will have failed the test. All five strips shall be tested in the same manner. NOTE: The adhesive strips shall not be handled during the chilling or testing procedure except when the actual snap test is made.

b. Moisture Resistance Test. Materials needed for this test are one adhesive strip, a Shore Durometer (Hardness Type A.2), or equivalent, a container, a thermometer and tap water. The adhesive strip shall be .020 thick, 2'' long and 2'' wide. The container shall hold enough water to completely immerse an adhesive strip of the above dimensions. The thermometer shall be used to insure that the water temperature remains at +70 degrees F. (+5 degrees F.) during the test period. When the

adhesive strip has been made and cooled for a minimum of one hour, make a hardness reading of the strip, using the Shore Durometer (circle the area read). Record the reading, the time and the date. Then place the strip in the container of tap water at +70 degrees F. (+ 5 degrees F.). Be sure that the strip is completely immersed during the entire test period. After eight hours immersion in the water, remove and dry the adhesive strip. Within one minute after removal from the water, initiate a second Durometer reading in the same area as the first reading. The results shall be recorded after the instrument has rested on the test strip for 30 seconds.

c. Elongation Test. Materials needed for this test are five adhesive strips, a ruler or other appropriate measuring device, and a device designed to apply a controlled, equal and opposite, pulling pressure on the ends of the adhesive strip. The adhesive strips shall be .020'' thick, .5'' wide and 2'' long. Five strips shall be tested and the results averaged. The test is made by placing the ends of the adhesive strip into the jaws or clamps of the pulling device. It is recommended that .5'' of each strip be clamped, leaving about 1'' of adhesive between the clamps. When the strip is taut, but not stretched, measure the length of the adhesive strip (distance between the clamps) and record the measurement. The temperature in the test area shall be +70 degrees F. (+5 degrees F.). Care should be exercised to insure a minimum of lateral pull on the adhesive strip. Apply controlled pulling pressure for from 10 to 30 seconds until the strip breaks (completely separates). Immediately discontinue the application of pulling pressure when the strip breaks and measure the distance between the clamps. The average elongation (stretch) must be 400% or greater.

4. Product Standards. The standards for adhesive are summarized as follows:

a. Adhesive shall be flexible at +22 degrees F.

b. Adhesive shall be moisture resistant.

c. Adhesive shall be capable of being elongated at least 400% within 10 to 30 seconds without breaking.

5. Certification of Test Results. Test results shall show the quality of each product standard characteristic cited in paragraph 4. All deviations from these standards shall be evaluated in accordance with the criteria contained in paragraph 6. In addition, the certification shall include the Purchase Order Number. The certification of test results must be available for review by the Government upon request.

6. Nonconformance Evaluation Criteria.

CODE	NONCONFORMANCE DESCRIPTION	CLASS
221-1	More than 1 strip cracks at +22 degrees F	6
221-2	Deviation greater than 10% difference (Durometer reading)	6
221-3	Elongation less than 400%	6

SECTION 6

INCOMING REPRODUCIBLE MATERIALS

1. General. This section deals mostly with downloaded files that, depending on the contractors processes, might be first converted into film, versus going directly to plates or press. If this is the case, then this film produced by the contractor is considered Incoming Reproducible Material. Additionally, in a rare case where any film negatives/positives are provided by NGA, this too is considered Incoming Reproducible Materials and any nonconformances found shall be reported so that corrections can be made.

2. Inspection. The Inspection Checklist #2 for Incoming Reproducibles (negatives or positives) shown in Annex A (separate MS Excel file) may be used by the contractor. Sampling may not be used in the inspection of incoming negatives or positives. Negative of positive films produced after downloading shall receive a 100% inspection. Each of the following critical characteristics shall be reviewed:

a. Count. A count shall be made to determine that all negatives or positives have been produced from downloads.

b. Identification. Negatives or positives shall be inspected to be sure all are properly identified.

c. Condition. All negatives or positives shall be inspected to be sure that they are unscratched, undamaged, and of suitable quality to produce acceptable printing.

d. Register Marks. Inspection shall be conducted to assure that all register marks required by specifications are included.

3. Nonconformance Evaluation Criteria.

CODE	NONCONFORMANCE DESCRIPTION	CLASS

	COUNT	
222-1	Over required number	3
222-2	Missing negative or positive	6
	IDENTIFICATION	
222-3	Page number or procedure not compatible with the table of contents	6
222-4	Product, effective date, chart number (including color), or book title incorrectly identified	6
	CONDITION	
222-5	Damaged - usable	3
222-6	Damaged - unusable	6
	REGISTER MARKS	
223-1	Missing, not correct or unusable	6

4. Quality Report. The portion of the NGA Quality Report to be used for Incoming Reproducibles is shown in Figure 8. An explanation of the specific information required is as follows:

a. Number of Negatives or Positives. Record the number of negatives or positives received for groups of:

(1) Enroute charts.

(2) Area Arrival charts.

(3) Planning charts.

(4) Terminal and Terminal/Supplement books.

(5) VFR Arrival/Departure Routes books.

(6) Enroute Supplement books.

(7) Flight Information Handbook.

(8) Planning books.

(9) TCNs, ECNs, ECN/TCNs, or UCNs.

Negatives or positives within each class of products may be grouped by a logical method that fits the production involved.

b. Number of Nonconformances. Number of nonconformances discovered on any negative or positive shall be considered. Describe all corrective actions in the space provided under ''Remarks.''

c. Percent Nonconformances. Indicate percentage of nonconformances based upon total negatives or positives in the group received.

THE FOLLOWING IS ONLY THE INCOMING REPRO. SECTION OF THE FULL NGA QUALITY REPORT :

OQC		**INCOMING REPRODUCIBLES (NEGATIVE OR POSITIVE)**			IQC
#	Total	Total %	#	Total	Total %

Inspected	Nonconformances		Nonconformances		Inspected	Nonconformances		Nonconformances	
	#3	#6	#3	#6		#3	#6	#3	#6

Figure 8. ''Negatives or Positives Inspection'' portion of the NGA Quality Report.

SECTION 7

PHOTOGRAPHIC SERVICES

1. General. Photographic Services includes all production functions required to generate intermediate or final reproduction copy through contact of negatives or positives and/or through any camera operations.

2. Process Standards. Standards for photographic services are established for compositing, cleanliness, facsimile, reproduction, and archival quality.

3. Inspection. The Inspection Checklist #3 Photo Services shown in Annex A (separate MS Excel file) may be used by the contractor. Photographic products to be used as intermediate or final reproduction copy shall be 100% inspected for each of the following characteristics:

a. Pinch or spread of dots, type, symbols, and lines from original.

b. Registration.

c. Generated negatives/positives shall be complete and free from imperfections generated in the manufacturing process such as kinks, foreign material, scratches.

d. Size is as specified in the contract.

e. Image Orientation.

f. Screen percent and angle.

4. Nonconformance Evaluation Criteria.

CODE	NONCONFORMANCE DESCRIPTION	CLASS
	RETENTION OF FEATURES	
225-1	Screen Dots, spread or pinched more than .0002"	6
225-2	Type, symbols, lines spread or pinched more than .0005"	6

	REGISTRATION	
225-3	Misregister greater than .002"	6
	COMPLETENESS	
225-4	Missing Image	6
	IMPERFECTIONS	
226-1	Scratches, kinks, etc. that will print	6
	MATERIAL	
226-2	Size deviating from specs over ± .02"	6
	IMAGE ORIENTATION	
226-3	Image reversed	6
	SCREENS	
226-4	Incorrect Composite	6
226-5	Percentage wrong	6
226-6	Angle wrong over 5%	6

5. Quality Report. The portion of the NGA Quality Report provided for Photo Services is shown in Figure 9. Information required is as follows:

a. Number of Composites. The actual composites produced, excluding remakes. Do not report the number of enlargements inspected or positives used to make the composites.

b. Number of Nonconformances. The number of nonconformances as a result of inspection. Under remarks identify those nonconformances that were in the copy received and corrective action taken.

c. Percent of Nonconformances. Compute the percent based on nonconformances and the number of composites.

THE FOLLOWING IS ONLY THE PHOTO SERVICES SECTION OF THE FULL NGA QUALITY REPORT :

OQC			**PHOTO SERVICES**		IQC
# Inspected	Total Nonconformances	Total % Nonconformances	# Inspected	Total Nonconformances	Total % Nonconformances
_____	#6_____	#6_____	_____	#6_____	#6_____

Figure 9. ''Photo Services'' portion of the NGA Quality Report.

SECTION 8

PLATEMAKING

1. General. Quality control of the plaetemaking operation assures that the required negatives or computer-to-plate images are used and that they are correctly screened, composited, and positioned on the plate.

2. Process Standards. The standards for platemaking pertain to registration of images for plate exposure and correct reproduction of furnished screens.

a. Registration. On composite exposures of negatives, the registration accuracy required between the first exposure and subsequent exposures is .002''. Registration accuracy is measured from center to center of the registration marks.

b. Screens. NGA furnishes screens as required by specifications. (Applicable only when contractor applies screens.)

3. Inspection. The Inspection Checklist #4 for Platemaking shown in Annex A (separate MS Excel file) may be used by the contractor. Sampling procedures may not be used in the inspection of printing plates. Complete or 100% inspection shall be made for each of the following characteristics:

a. Completeness. Plates are inspected to assure negatives have all been exposed and registration marks are on each plate.

b. Layout. Inspect for correct page number, sequence, and position.

c. Composite. All plates shall be inspected to assure that correct negatives have been composited and that registration has been held to within a tolerance of .002''.

d. Screens. All plates shall be inspected to assure that specified screens have been used and that dot size and line widths correspond with those of NGA furnished screens (if ever the contractor applies screens).

e. Cleanliness. All plates shall be inspected for foreign matter.

4. Quality Report. The portion of the NGA Quality report provided for Platemaking is shown in Figure 10. Information required is as follows:

a. Number of Plates. The actual plates made for the assignment excluding those remade prior to going to press.

b. Number of Nonconformances. Any nonconformance discovered and corrected on any printing plate, before or during printing, is to be considered. This includes all plates remade due to wear out or other technical difficulty during printing. Describe all corrective actions in the space provided under ''Remarks''.

c. Percent Nonconformances. Indicates percentage of all nonconformances based upon the total number of plates for the group, excluding any remakes before printing.

5. Nonconformance Evaluation Criteria.

CODE	NONCONFORMANCE DESCRIPTION	CLASS
	COMPLETENESS	
228-1	Missing image	6
	LAYOUT	
228-2	Inverted page	3
228-3	Missing page number	6
228-4	Missing or out of sequence page	6
	COMPOSITE	
229-1	Separation of register marks greater than .002"	6
229-2	Incorrect feature composited	6
229-3	Incorrect image placement	6
	SCREENS	
229-4	Incorrect screens used (Printer applied screens)	6

THE FOLLOWING IS ONLY THE PLATEMAKING SECTION OF THE FULL NGA QUALITY REPORT :

OQC			**PLATEMAKING**			IQC		
# Inspected	Total Nonconformances #3	#6	Total % Nonconformances #3	#6	# Inspected	Total Nonconformances #3	#6	Total % Nonconformances #3	#6

Figure 10. ''Printing Plates Inspection'' portion of the NGA Quality Report.

SECTION 9

PRINTING

1. General. This section contains guidance regarding quality control of sheet and web press printing. The factors that shall be controlled during printing are color, bar codes, register, and lithographic quality. Folding shall also be controlled on web press printing. The contractor shall have previously provided adequate control of the paper, ink, presses, press components, blankets, rollers, and other press supplies necessary to produce a quality litho print.

2. Process Standards. Standards and tolerances for printing are established for the elements of color, bar codes, register, and lithographic quality. The measurements required in this chapter are to be made by use of shop microscopes, electronic densitometers/spectrodensitometers, graduated scales, bar code readers, and visual comparator/comparisons books (PMS swatches).

a. Color. The numerical film density tolerances for printing inks used on this contract are shown in Figure 11. These readings are for uncoated (U) paper where dry back has been allowed. The numerical standards are based on readings from NGA's two contractors as of April 2010 using different densitometer equipment. As shown in Figure 11, four of the PMS ink colors are common to both contractors. Correlative values must be established when using other than the densitometers shown. Note: On a related topic, ink L.a.b. readings are shown in NGA's General and Technical Provisions, (see General Information, Section 300, Raw Materials), using both a Gretag/Macbeth series, model Eye-One spectrophotometer (contractor #1), or a X-RITE 500 spectrodensitometer (contractor #2). These L.a.b. readings are provided as an aid in ensuring inks purchase are color accurate.

b. Register. Printing register is controlled by centerline marks. The tolerances for composite register on either side of the sheet and for backup register is .020''. Charts printing head to foot will require a bottom center mark on one of the charts for backup register control.

c. Lithographic Quality. Lithographic quality includes all printing characteristics not assignable as color or registration. The standard for lithographic quality is a condition in which quality of the printed matter duplicates the quality of the reproduction materials. It is

characterized by sharp, clean printing and the absence of smears, smudges, spots, scratches, holes, fill-ins, weak detail, missing detail, or any other factor that would be detrimental to the good appearance of the final lithographic sheet.

d. Chart Backup. Charts shall be backed-up as specified, either head to head or head to foot.

e. Bar Codes. All books and charts shall be printed as specified with two bar codes. One bar code shall identify the National Stock Number (NSN) while the other identifies the effective date cycle. Additionally,

PRINTING COLOR DENSITY TOLERANCES						
PMS	FLIP PRODUCT TYPE	READING EQUIPMENT	COLOR	LIGHT	NORMAL	DARK
106 U	Books	X-RITE 500	Yellow	62	67	72
134 U	Charts	X-RITE 404	Yellow	48	55	62
139 U	Charts	X-RITE 404	Brown	99	105	111
199 U	Charts, Contractor # 1	X-RITE 404	Red	77	94	118
199 U	Books, Contractor # 2	X-RITE 500	Red	100	105	110
290 U	Books	X-RITE 500	Blue	17	22	27
354 U	Charts	X-RITE 404	Green	82	91	100
360 U	Charts	X-RITE 404	Green	68	73	80
427 U	Books	X-RITE 500	Gray	23	28	33
464 U	Books	X-RITE 500	Brown	93	98	103
498 U	Charts, Contractor # 1	X-RITE 404	Brown	88	99	111
498 U	Books, Contractor # 2	X-RITE 500	Brown	96	101	106
566 U	Books	X-RITE 500	Green	27	32	37
728 U	Books	X-RITE 500	Brown	60	65	70
1585 U	Books	X-RITE 500	Orange	90	98	108
Pantone Black U	Charts, Contractor # 1	X-RITE 404	Black	103	115	130
Pantone Black U	Books, Contractor # 2	X-RITE 500	Black	102	107	112
Reflex Blue U	Charts, Contractor # 1	X-RITE 404	Blue	100	110	120
Reflex Blue U	Books, Contractor # 2	X-RITE 500	Blue	130	135	140
Process U	Books	X-RITE 500	Blue	122	127	132
Process U	Books	X-RITE 500	Yellow	90	95	100
Process U	Books	X-RITE 500	Red	130	135	140
Process U	Books	X-RITE 500	Black	160	165	170

a NGA reference number prints below the bar codes.

Figure 11. Color Standards: Densities and Tolerances

3. Sampling. Samples shall be extracted at the rate of one for every 250 units produced under normal sampling and one for every 500 units produced under reduced sampling. (Reduced sampling must be authorized by the Program Manager). A minimum of five samples shall be extracted regardless of the quantity produced. The maximum samples required are 66 for normal and 33 for reduced. For production quantities of 16,500 units

and more, divide the quantity by 66 or 33 for sampling frequency. Each sample shall represent an equal portion of the production run. A ''unit'' is a signature, sheet, form, or any other product delivered from the press. Products shall be sampled for each pass through the press. Web presses with more than one delivery shall be sampled at each delivery.

4. Inspection. The Inspection Checklist #5 for Printing (folding/web) shown in Annex A (separate MS Excel file) may be used by the contractor. Each printing sample shall be inspected for color, bar codes, register, and litho quality according to the printing process (sheet or web) being used. Inspection of audit samples from sheet presses shall be performed OQC as the sheets are produced. On high speed web presses it is recognized that inspection cannot be performed completely OQC; however, there must be enough OQC inspection to validate the general acceptability of the printing. The balance of the inspection shall be completed in a timely manner after the press run is completed and prior to the start of the next production operation.

a. Color. An electronic densitometer (or spectrodensitometer) capable of reliable color density measurement shall be used to determine color density when color circles are specified. Solid area circles shall be printed on the gripper edge of the sheet. The circles must be placed strategically so that they shall reflect greatest coverage of the area being printed. Each circle shall then be read with the densitometer to assure that the density is within the tolerance range indicted in Figure 11. If the densitometer reading indicates that the color is beyond the tolerance range, nonconformances shall be assigned in accordance with the Nonconformance Evaluation Criteria given in paragraph 5. When color circles are not specified, a color comparator (Pantone Matching System Color Formula Guide) which shows the visual normal color may be used. Consideration should be given for an appropriate amount of dry back when taking electronic densitometer readings and when utilizing color comparators which are printed on different stock than used for FLIP products. The comparators must be used at press make-ready, during the run, and at post-printing inspections when color circles are not specified. Exceeding the dark specification is a #6 defect. Exceeding the light specification is a #3 defect. Exceeding the #3 defect limit is a #6 defect.

b. Register. Measuring register accuracy shall be done with a shop microscope which is calibrated in thousandths of an inch. Composite colors and backup register shall be measured. Deviations from allowable tolerances shall be assigned defects in accordance with the Nonconformance Evaluation Criteria in paragraph 5. Measuring shall be done from center to center of register marks.

c. Litho-Quality. Measurement of litho quality is accomplished by visual examination of the printed sheet for the lithographic flaws.

d. Folding. The accuracy of chart or signature folding shall be inspected and controlled, whether the folding is performed on press or bindery equipment. Folding accuracy shall be evaluated by the quality of

the folded charts or the finished bound book, as applicable. See Section 10, FINISHING, for folding standards and nonconformance criteria.

e. Backup. Correct backup shall be visually inspected to assure charts are head to head or head to foot as specified.

f. Bar Codes. The bar codes identifying the NSN and product effective date shall be inspected to correspond to the product for which they are affixed. Any bar code reader that accurately confirms the readable NSN and Effective Date on the product is acceptable for this process.

5. Nonconformance Evaluation Criteria.

CODE	NONCONFORMANCE DESCRIPTION	CLASS
	PMS COLOR DENSITOMETER READINGS	
	106 Yellow U - 62 to 72 (Normal 67)	
233-1	50 or less	6
233-2	51 to 61	3
233-3	73 to 83	3
233-4	84 and over	6
	134 Yellow U - 48 to 62 (Normal 55)	
233-5	36 or less	6
233-6	37 to 47	3
233-7	63 to 73	3
233-8	74 and over	6
	139 Brown U - 99 to 111 (Normal 105)	6
233-9	87 or less	6
233-10	88 to 98	3
233-11	112 to 122	3
233-12	123 and over	6
Contractor # 1	X-Rite 404 Densitometer 199 Red U - 77 to 118 (Normal 94)	
233-13	65 or less	6
233-14	66 to 76	3
233-15	119 to 129	3
233-16	130 and over	6
Contractor # 2	X-Rite 500 Spectrodensitometer 199 Red U - 100 to 110 (Normal 105)	
233-17	88 or less	6
233-18	89 to 99	3
233-19	111 to 121	3
233-20	122 and over	6
	290 Blue U - 17 to 27 (Normal 22)	6
233-21	5 or less	6
233-22	6 to 16	3
233-23	28 to 38	3

233-24	39 and over	6
	354 Green U - 82 to 100 (Normal 91)	6
233-25	70 or less	6
233-26	71 to 81	3
233-27	101 to 111	3
233-28	112 and over	6
	360 Green U - 68 to 80 (Normal 73)	
233-29	56 or less	6
233-30	57 to 67	3
233-31	81 to 91	3
233-32	92 and over	6

	427 Gray U - 23 to 33 (Normal 28)	
234-1	11 or less	6
234-2	12 to 22	3
234-3	34 to 44	3
234-4	45 and over	6
	464 Brown U - 93 to 103 (Normal 98)	
234-5	81 or less	6
234-6	82 to 92	3
234-7	104 to 114	3
234-8	115 and over	6
Contractor # 1	X-Rite 404 Densitometer 498 Brown U - 88 to 111 (Normal 99)	
234-9	76 or less	6
234-10	77 to 87	3
234-11	112 to 122	3
234-12	123 and over	6
Contractor # 2	X-Rite 500 Spectrodensitometer 498 Brown U - 96 to 106 (Normal 101)	
234-13	84 or less	6
234-14	85 to 95	3
234-15	107 to 117	3
234-16	118 and over	6
	566 Green U - 27 to 37 (Normal 32)	
234-17	15 or less	6
234-18	16 to 26	3
234-19	38 to 48	3
234-20	49 and over	6
	728 Brown U - 60 to 70 (Normal 65)	
234-21	48 or less	6
234-22	49 to 59	3
234-23	71 to 81	3
234-24	82 and over	6
	1585 Orange U - 90 to 108 (Normal 98)	
234-25	78 or less	6

234-26	79 to 89	3
234-27	109 to 119	3
234-28	120 and over	6
Contractor # 1	X-Rite 404 Densitometer Pantone Black U - 103 to 130 (Normal 115)	
234-29	191 or less	6
234-30	192 to 202	3
234-31	131 to 141	3
234-32	142 and over	6
Contractor # 2	X-Rite 505 Spectrodensitometer Pantone Black U - 102 to 112 (Normal 107)	
235-1	90 or less	6
235-2	91 to 101	3
235-3	113 to 123	3
235-4	124 and over	6

Contractor # 1	X-Rite 404 Densitometer Reflex Blue U - 100 to 120 (Normal 110)	
235-5	88 or less	6
235-6	89 to 99	3
235-7	121 to 131	3
235-8	132 and over	6
Contractor # 2	X-Rite 505 Spectrodensitometer Reflex Blue U - 130 to 140 (Normal 135)	
235-9	118 or less	6
235-10	119 to 129	3
235-11	141 to 151	3
235-12	152 and over	6
	Process Blue (Cyan) U - 122 to 132 (Normal 127)	
235-13	110 or less	6
235-14	111 to 121	3
235-15	133 to 143	3
235-16	144 and over	6
	Process Yellow U - 90 to 100 (Normal 95)	
235-17	78 or less	6
235-18	79 to 89	3
235-19	101 to 111	3
235-20	112 and over	6
	Process Red (Magenta) U - 130 to 140 (Normal 135)	
235-21	118 or less	6
235-22	119 to 129	3
235-23	141 to 151	3
235-24	152 and over	6
	Process Black U - 160 to 170 (Normal 165)	
235-25	148 or less	6
235-26	149 to 159	3
235-27	171 to 181	3
235-28	182 and over	6
	REGISTRATION	
	Composite Register - Either side of sheet	

236-1	Deviation over .020" to .022"	1
236-2	Deviation over .040" to .060"	3
236-3	Deviation over .025"	6
	BACKUP REGISTER	
236-4	Deviation over .020" to .040"	1
236-5	Deviation over .040" to .060"	3
236-6	Deviation over .060"	6
	BACKUP ORIENTATION	
236-7	Not as specified	6
	BAR CODES	
236-8	Unreadable or incorrect bar code	3

6. Quality Report. The portion of the NGA Quality Report provided for Printing is shown in Figure 12. This part of the form is designed to report only nonconformance samples, the degree of nonconformance, and the attribute which is nonconformed, such as color, register, or litho quality. A ''Remarks'' section at the bottom of the report may be used to identify the nonconformance data.

a. Form Number. Show normal identification as used by the contractor on their own internal job tickets, such as Form I, Signature 1, Section 1, etc. Description of the content of the contractor's printing form or signature is required. The ''Remarks'' section at the bottom of the NGA Quality Report may be used.

b. Total Number of Samples. The number shown shall not be less than the minimum requirement stated in this manual for Normal Sampling or Reduced Sampling, whichever has been authorized. If the contractor elects to pull additional samples, which is permissible, show the exact number of samples pulled. Each sample shall be inspected.

c. Color, Register, and Litho Quality. For each color run, enter the sequential number of the nonconformed samples. In the Remarks part show the following data for each nonconformed sample:

(1) The sequential number of the nonconfomance sample.

(2) The classification of the defect, #3 or #6

(3) The ink color run.

(4) A description of the nonconformance.

(5) A description of the corrective action taken and the part of production to which the corrective action was applied. Explanatory remarks are important in evaluating the quality program, determining inspection efficiency, and indicating the average outgoing quality level of production. A full explanation shall be given. Utilization of Enclosure 1 Corrective Action Form will help in this analysis.

d. Total Nonconformances. Add the samples for each class of defect, i.e., #3 and #6, and show the total number of samples containing each

class in the columns marked 3 and 6. Also, show the percent nonconformance, which is computed by dividing the number of nonconformances by the total number of samples (times 100) for each class of nonconformance. The above method is designed for reporting printing nonconformances for a single printing form or sheet (one pass through the press). The portion of NGA Quality Report titled ''Printing'' is designed to report inspection and assign nonconformances.

THE FOLLOWING IS ONLY THE PRINTING SECTION OF THE FULL NGA QUALITY REPORT :

PRINTING

FORM # _____

OQC		IQC	
	# Nonconformances #3 ____ #6 ____		# Nonconformances #3 ____ #6 ____
# Inspected _____	% Nonconformances #3 ____ #6 ____	# Inspected _____	% Nonconformances #3 ____ #6 ____

Figure 12. ''Printing Sampling Inspection'' portion of the NGA Quality Report

SECTION 10

FINISHING

1. General. This section contains guidance for the control of quality in finishing operations for charts, staple bound books, and adhesive bound books.

2. Sampling. Samples for each chart or book shall be extracted at the rate of one for every 250 units produced under normal sampling and one for every 500 units produced under reduced sampling. (Reduced sampling must be authorized by the Program Manager.) A minimum of five samples shall be extracted regardless of the quantity produced. The maximum samples, excluding those for trimming of charts and adhesive strength, shall be 66 for normal and 33 for reduced. For quantities of 16,500 and more, divide the quantity by 66 or 33 for the sampling frequency. Each sample shall represent an equal portion of the production run. This sampling plan applies to all production processes except trimming of charts, collation, and adhesive binding. The collation process shall be sampled at the rate of 1 per 50 for each item collated, whether under normal sampling or reduced sampling. Sampling for trimming of charts and for adhesive strength tests are covered under paragraphs 4 and 12 respectively. All acceptable finishing samples, except those used for testing adhesive binding strength, may be returned to production after they have received the IQC inspection and the results are recorded.

3. Charts. The quality control of chart finishing operations includes the control of trimming, folding, and collating.

4. Process Standards and Checklists for Charts.

a. Trimming. The Inspection Checklist #6 for Trimming shown in a separate document Annex A (separate MS Excel file) may be used by the contractor. Trimming shall be held to the specified dimension with a tolerance range of +3/16''. No tolerance is allowed for trimming

undersize. A trimming sample will be pulled at no less than 10 sheets from the top of each cutting lift.

b. Folding.

(1) The Inspection Checklist #7 for Folding shown in a separate document Annex A (separate MS Excel file) may be used by the contractor.

(2) Panels are to be folded flush with each other and each panel shall be the specified size with a tolerance of ±1/8''. The fold shall be between the panel identifiers (AB, BC, CD, etc.) shown at the top and bottom of the enroute charts.

(3) The folded chart shall be as specified with a tolerance of ±1/8''.

(4) The folded chart shall be free from wrinkles.

c. Collating. The Inspection Checklist #8 for Collating shown in a separate document Annex A (separate MS Excel file) may be used by the contractor. All charts shall be collated in correct sequence and in proper position as specified.

5. Inspection of Charts. Chart samples extracted in accordance with the provisions of paragraph 2 shall be inspected to assure that all charts are trimmed and folded correctly, and that those specified for chart sets are collated in the proper sequence. All inspections must be completed and corrections made prior to the start of the next production operation.

6. Nonconformance Evaluation Criteria for Charts.

CODE	NONCONFORMANCE DESCRIPTION	CLASS
	TRIM	
238-1	Oversize from 3/16" to 1/4"	3
238-2	Oversize in excess of 1/4"	6
238-3	Under specified size-image trimmed-detail legible	3
238-4	Under specified size-image trimmed-detail illegible	6
	FOLD	
238-5	Undersize by 1/4" or more	6
238-6	Undersize by 3/16" to less than 1/4"	3
238-7	Undersize by 1/8" to less than 3/16"	1
238-8	Oversize by 1/8" to less than 3/16"	1
238-9	Oversize by 3/16" to 1/4"	3
238-10	Oversize in excess of 1/4"	6
238-11	Chart incorrectly folded	6
238-12	Folded on panel identifier, identifier legible from both sides of fold	3
238-13	Panels not flush within 3/16"	6
238-14	Wrinkles hiding detail	6
	COLLATION	
238-15	Charts out of sequence or inverted	3
238-16	Chart or charts missing	6

7. Staple Bound Books. Quality control of book finishing operations includes control of trimming, folding (if not controlled at the press), collation, stapling, and drilling. Some checklists for charts shown in a separate document Annex A (separate MS Excel file) also apply to staple book production (Checklists #6 Trimming, Checklist #7 Folding off Press, and Checklist #8 Collating; plus Checklist #11 for Stapling and Checklist #12 for Drilling.

8. Process Standards for Staple Bound Books.

a. Signature Folding. Margins from image to edge or gutter of the finished page shall be even and accurate throughout the book, varying not more than 1/8''. Signatures must not contain wrinkled pages.

b. Collating. Signatures shall be properly inserted with no pages out of sequence or missing.

c. Stapling.

(1) Position of staples on the bound edge shall be as specified to ± 3/8'' and not less than 3/4'' from either end of the bound edge.

(2) Staples shall be centered on the saddle fold with a tolerance of 1/32''.

(3) Pages shall not pull free from book spine by elevating the book and holding the center four pages (two sheets) by the index finger and thumb.

d. Drilling.

(1) Hole diameter shall be as specified to ± 1/64''.

(2) Hole position from the bound edge shall be as specified to ± 1/64''.

(3) Hole position from the bottom trim of book shall be as specified to ± 1/64''.

e. Trimming. Books shall be trimmed to specified dimensions with a tolerance of 0 to +3/16''.

9. Inspection of Staple Bound Books. Samples of staple bound books shall be inspected as per the guidance in paragraph 2. When folded off-press on folding equipment, sample signatures shall be inspected for folding accuracy. Sample books shall be inspected for collation, stapling, page(s) separation, drilling, and trimming. Defects discovered during these inspections shall be evaluated in accordance with the Nonconformance Evaluation Criteria shown in paragraph 13. All inspections shall be completed and corrections made prior to the next production operation.

10. Adhesive Bound Books. Quality control of adhesive bound book finishing operations includes control of folding (if folding is not controlled at the press), collation, binding adequacy, backbone identification and trimming.

11. Process Standards for Adhesive Bound Books.

a. Signature Folding. Signature folding shall be done so that margins will be even throughout the book, varying no more than 1/8''. Wrinkle nonconformances are the same as they are for staple bound books.

b. Cover/Backbone Identification. Cover and backbone identity shall be correct and compatible with contents of book.

c. Adhesive Penetration. Adhesive penetration into pages and covers shall not exceed 1/16''.

d. Adequacy of Adhesive Bind. Pages or cover shall not separate from book spine (1) during 300 flexes, or (2) page(s) separate on pull test equipment at room temperature, or (3) at + 130 degrees F.

e. Adhesive Thickness. Adhesive thickness shall not exceed .025'' in average of readings.

f. Trim. Trim size shall be to specified dimensions with a tolerance of + 3/16''.

g. Heel Strength of Cover. Cover stock on heel of book shall not split or tear.

h. Collating. Collating shall be performed so that no page is inverted, out of sequence, or missing.

i. Drilling. Same process /standards as for staple bound books.

12. Sampling for Adhesive Strength Tests. Products may be sampled on the basis of production lots. For this purpose a production lot is defined as those products produced in a continuous or uninterrupted (not more than three calendar days between production runs) operation using the same materials. A number of different book titles may be included in a production lot.

The Binding Adequacy portion of the FLIP Quality Report shall reflect the number of samples for the volume being reported plus the total samples in the lot. Samples and the area of the production lot from which they were pulled shall be identified numerically, i.e., 1,2,3,4, etc. Each sample will then relate to the area of the lot it represents. If a sample fails and a retest is required, the isolated area shall be resampled so that the new sample represents the suspected lot. Separate samples shall be extracted for each test. When samples are extracted for the Adhesive Strength Tests (Flex and Pull) the books removed for samples shall be sequential in the production line and the sequentially pulled books will be classed as one sample. Adhesive strength tests include Page Flex, Page Pull, Temperature, and Adhesive Thickness.

Samples drawn for adhesive strength tests shall be in accordance with the Sampling Table shown in Figure 13 and shall represent approximately equal portions of the production lot.

13. Nonconformance Evaluation Criteria for Staple Bound Books.

CODE	NONCONFORMANCE DESCRIPTION	DEMERITS
	SIGNATURE FOLDING	
239-1	Margins varying more than 1/8"	1
239-2	Image trimmed - legible	3
239-3	Image trimmed - illegible	6
239-4	Wrinkles in paper - detail illegible	6
	COLLATING	
239-5	Page inverted	3
239-6	Page out of sequence or missing	6
	STAPLING	
	POSITION OF STAPLES ON BOUND EDGE	
239-7	In excess of 3/8" to 5/8"	1
239-8	In excess of 5/8" to 1"	3
239-9	In excess of 1"	6
239-10	Less than 3/4" from stapled end to book edge	6
	POSITION OF STAPLES ON SADDLE FOLD	
239-11	In excess of 1/32" to 1/16"	1
239-12	In excess of 1/16" to 1/8"	3
239-13	In excess of 1/8"	6
239-14	Missing staple / or page(s) separation	6
	DRILLING	
	HOLE DIAMETER	
240-1	Undersize by 1/16" or more	6
240-2	Undersize by 1/32" to less than 1/16"	3
240-3	Undersize by 1/64" to less than 1/32"	1
240-4	Oversize by 1/64" to less than 1/32"	1
240-5	Oversize by 1/32" to less than 1/16"	3
240-6	Oversize by 1/16" or more	6
	HOLE POSITION FROM BOUND EDGE	
240-7	In excess of $\pm$ 1/16" to $\pm$ 3/32"	1
240-8	In excess of $\pm$ 3/32" to $\pm$ 1/8"	3
240-9	In excess of $\pm$ 1/8"	6
	HOLE POSITION FROM BOTTOM TRIM OF BOOK	
240-10	In excess of $\pm$ 1/64" to $\pm$ 1/32"	1
240-11	In excess of $\pm$ 1/32" to $\pm$ 1/16"	3
240-12	In excess of $\pm$ 1/16"	6
240-13	Number of holes incorrect	6
240-14	Information drilled out / legible	3
240-15	Information drilled out / illegible	6
	TRIMMING	
240-16	Larger by 3/16" to 1/4"	3
240-17	Larger by 1/4" or more	6
240-18	Under specified size-image trimmed-detail legible	3
240-19	Under specified size-image trimmed-detail illegible	6

14. Inspection and Test of Adhesive Bound Books. Sample books taken in accordance with the provisions of paragraphs 2 and 12 shall be inspected for folding, collating, trimming, page flex, page pull, adhesive thickness, adhesive hot strength, and heel tear as applicable. Nonconformances discovered during each inspection shall be evaluated by use of the Nonconformance Evaluation Criteria contained in paragraph 15.

a. Adhesive Hot Strength Test. The process for performing this test is to open the book at the center (± ten pages) and fold back to back. Keep the trim edges even and let the pages fan. With the book folded back to back, apply a clamping or holding device at a point 1'' to 1-1/4'' from the book spine. Place the book in a controlled temperature environment of 130 degrees F. (±3 degrees F.) for four hours. Complete separation of any pages or the cover will be classed as a reject.

b. Adhesive Thickness Test. The procedure for performing this test is to take the sample book and cut through the adhesive on the book heel. Starting at the FACE left hand edge, the heel shall be cut diagonally toward the BACK right hand edge. This cut shall penetrate through the adhesive film. Next, the book shall be torn apart along the cut line and the thickness of the exposed adhesive measured. The measurement shall be made where the adhesive is uniform, not at a grooved area of the spine. The measurements shall be made at 1/2'' from each edge and at the center of the book. A pencil or pen mark shall be shown at each of the locations where measurements were made. The average of these readings shall be the accepted measurement for adhesive thickness; however, if any reading is double, or more than double the lowest reading, then only the higher two shall be used to determine the average. Measurements averaging in excess of .025'' shall be assigned a nonconformance in accordance with the Nonconformance Evaluation Criteria contained in paragraph 15.

c. Page Flex Test. This test shall be performed on a page flex tester. All books shall be tested in their final trim size. The clamp shall exert a pull of 1-1/2 pounds (plus 3 ounces tolerance), on the test page during the flexing cycle. Each sample book shall be tested in two areas. The specified page to be tested shall be dependent on the total number of printed and unprinted pages in the book, excluding the cover. The table shown in Figure 14 shall be used to determine which pages are specified for test. The book to be tested shall be positioned on the inclined base so that the test page is centered relative to the flex clamp. Both stationary groups of pages shall be secured to the inclined bases with the clamps provided and the test page inserted between the cycling bars. The stationary groups shall be secured so they do not interfere with the free movement of the test page. The clamp shall then be fastened at the approximate center of the page, within 1/2'' of the page edge away from the spine. The clamp shall be aligned so that it is plumb with the pulley when attached to the page in a flexing position. The page shall swing in an arc of 90 degrees or more at a rate of 60 ±3 cycles per minute. Pages tested shall withstand 300 flexes without pulling free of the book spine. If either of the Original Pages" for FLEX Test pulls out at less than 300 flexes, the retest page for that area of the book shall be tested. If the retest page pulls out at less than 300 flexes, it constitutes a failure. A failure in both

areas results in a book reject. A failure in only one area means the book has passed the flex test. A failure in the flex test plus a failure in the pull test results in a book reject. When a book is rejected, resampling and retesting is required in accordance with the Sampling and Acceptance Table in Figure 13.

d. Page Pull Test. Each sample book shall be tested on a page pull tester in two areas. The spine length and pages specified to be tested are identical to the Page Flex Test described in the preceding paragraph. Figure 14 identifies the pages to be tested using the Page Pull Test. This test is performed by opening the book to the page specified for testing, fastening it securely and squarely to the pulling device, tightening the remainder of the sample book against the pulling bar, and then measuring the amount of pull required to either burst the paper or pull the page free. If either of the Original Pages pull free at less than the specified pounds, the retest page for that area of the book shall be tested. If the retest page pulls free at less than the specified pounds, it constitutes a failure. A failure in both areas results in a book reject. A failure in only one area means the book has passed the pull test. . A failure in the pull test plus a failure in the flex test results in a book reject. When a book is rejected, resampling and retesting is required in accordance with the table in Figure 13.

SAMPLING AND ACCEPTANCE TABLE - ADHESIVE STRENGTH

TEST	PRODUCT LOT SIZE	NUMBER OF SAMPLES	ACCEPTABLE NUMBER	RETEST NUMBER
Temperature	0 - 1,000,000	5	0	1
Adhesive Thickness	0 - 1,000,000	5	0	1
Flex and Pull	0 - 10,000	5	0	1
	10,001 - 20,000	7	0	1
	20,001 - 50,000	12	0	1
	50,001 - 150,000	20	1	2
	150,001 - 300,000	35	2	3
	300,001 - 500,000	50	2	3
	500,001 - 750,000	75	3	4
	750,001 - 1,000,000	100	4	5

If sample rejects exceed the "accept" number for the number of samples tested, additional samples must be tested for each reject, e.g., if 50 samples were tested and 3 rejects were found, all three rejects will require new samples and tests. Samples for the retest must be drawn from the area of the lot represented by the sample reject.

RESAMPLING AND RETEST TABLE		
Number of Samples Required	Accept	Reject
5 for each sample reject	0	1

If no rejects are found on the retest, the total lot will be considered acceptable. Any rejects in the retest will be considered cause for rejection and NGA must be notified immediately. Additionally, the area of the production lot represented by the original sample reject(s) will be considered defective, and the indicated percentage of the lot represented by the sample will be used to compute the percent defective for the lot.

Figure 13. Sampling and Acceptance Table - Adhesive Strength

THE FOLLOWING IS ONLY THE PAGE FLEX / PAGE PULL SECTION OF THE FULL NGA QUALITY REPORT :

PAGE FLEX AND PULL TEST TABLE

PAGE LOCATION GUIDE			PULL TEST GUIDE	
IN BOOK	ORIGIANL PAGES FOR TEST	* RETEST PAGES	SPINE LENGTH	POUNDS
50 TO 74	20 AND 40	23 AND 43	5"	20
75 TO 100	33 AND 66	38 AND 71	8"	24
101 TO 125	42 AND 84	47 AND 89	10"	30
126 TO 150	50 AND 100	55 AND 105	10 1/2"	32
151 TO 200	66 AND 132	71 AND 137	10 7/8"	33
201 TO 225	75 AND 150	80 AND 155		
226 TO 300	100 AND 200	105 AND 205		
301 TO 400	133 AND 266	138 AND 271		
401 TO 500	166 AND 332	171 AND 337		
501 & OVER	200 AND 400	205 AND 405		

* Retest pages will be used only when a failure occurs on the original testing.

NOTE: In order to determine the location to perform the test, disregard the actual page numbers and count the number of printed / unprinted pages as indicated in this table. (If counting sheets, divide the original page number by 2 i.e., 20 pages = 10 sheets).

Figure 14. Page Flex and Pull Test Table

15. Nonconformance Evaluation Criteria for Adhesive Bound Books.

CODE	NONCONFORMANCE DESCRIPTION	CLASS
	SIGNATURE FOLDING	
244-1	Margins varying more than 1/8"	1
244-2	Image trimmed - legible	3
244-3	Image trimmed - illegible	6
	COVER BACKBONE IDENTIFICATION	
244-4	Missing, incorrect or placed on the wrong book	6
244-5	Backbone identification wraps around front or back of book. Legible when viewed from backbone	3
244-6	Backbone identification wraps around front or back of book. Not legible when viewed from backbone	6
	ADHESIVE PENETRATION INTO PAGES AND COVER	
244-7	In excess of 1/16" - print legible	1
244-8	In excess of 1/16" - difficult to open pages	3
244-9	In excess of 1/16" - print illegible	6

	ADEQUACY OF ADHESIVE BIND	
244-10	Pages separate from book spine in two retests of Flex and/or Pull after sample book failed original tests	6
244-11	Pages or cover separte from sample book at 130 degrees F (±3 F)	6
	ADHESIVE THICKNESS	
244-12	Average thickness exceeds .025"	6
	TRIM	
245-1	Larger by 3/16" to 1/4"	3
245-2	Larger by 1/4" or more	6
245-3	Under specified size-image trimmed-detail legible	3
245-4	Under specified size-image trimmed-detail illegible	6
	SPLIT OR TORN COVER STOCK ON HEEL OF BOOK	
245-5	1/4" or less in length	1
245-6	In excess of 1/4" to 1/2" in length	3
245-7	In excess of 1/2" in length	6
	COLLATION	
245-8	Page inverted	3
245-9	Page out of sequence or missing	6
	DRILLING	
245-10	The defect description is the same as for staple bound books	-

16. Quality Report. Only one finished product (chart, book, collated set) shall be reported on that portion of the NGA FLIP Quality Report in relation to finishing operations. The results of inspection for the finishing operations shall be submitted to the Program Manager. The five parts of the FLIP Quality Report related to finishing are trimming, folding off-press, collation, stapling, and drilling. Figure 15 illustrates the basic information to be recorded in the FLIP Quality Report with respect to finishing operations. The inspection checklists used in accumulating data for the FLIP Quality Report with respect to the five areas can be found in Annex A (separate MS Excel file).

THE FOLLOWING IS ONLY THE FINISHING SECTIONS OF THE FULL NGA QUALITY REPORT :

OQC					IQC				
	TRIMMING								
	# Nonconformances #3 ____	#6 ____				# Nonconformances #3 ____	#6 ____		
# Inspected _____	% Nonconformances #3 ____	#6 ____			# Inspected _____	% Nonconformances #3 ____	#6 ____		
OQC					IQC				
	FOLDING OF-PRESS								
	# Nonconformances #3 ____	#6 ____				# Nonconformances #3 ____	#6 ____		
# Inspected _____	% Nonconformances #3 ____	#6 ____			# Inspected _____	% Nonconformances #3 ____	#6 ____		
OQC					IQC				
	COLLATION								
	# Nonconformances #3 ____	#6 ____				# Nonconformances #3 ____	#6 ____		
# Inspected _____	% Nonconformances #3 ____	#6 ____			# Inspected _____	% Nonconformances #3 ____	#6 ____		
OQC					IQC				
	STAPLING								
	# Nonconformances #3 ____	#6 ____				# Nonconformances #3 ____	#6 ____		
# Inspected _____	% Nonconformances #3 ____	#6 ____			# Inspected _____	% Nonconformances #3 ____	#6 ____		
OQC					IQC				
	DRILLING								
	# Nonconformances #3 ____	#6 ____				# Nonconformances #3 ____	#6 ____		
# Inspected _____	% Nonconformances #3 ____	#6 ____			# Inspected _____	% Nonconformances #3 ____	#6 ____		

Figure 15. ''Trimming, Folding Off-Press, Collation, Stapling and Drilling'' portion of the NGA Quality Report

a. Finishing. This section deals with finishing operations and is designed to show the nonconformance samples for the operations.

(1) Total Samples. This item is self-explanatory.

(2) Total Nonconformances. Follow same procedure as for printing.

(3) Percent Nonconformance. Achieved by dividing the total number of nonconformances in each category by the total number inspected (times 100) for each class of nonconformance.

b. Binding Adequacy. This part of the NGA Quality Report has four subsections tests: Flex, Pull, Temperature, and Adhesive Thickness, all shown in figure 16. The checklists used in accumulating the data with respect to these four areas are shown in Annex A (separate MS Excel file). Guidance for use of this part of the form is as follows:

(1) Flex and Pull Tests.

(a) Number of Failures (2 pages out). When a test page and a retest page pull out at less than the specification, this is defined as failure. Show how many failures were experienced for the number of sample books tested. This should be a total of the failures in the original test samples, plus failures in any resamples, and will reflect the relative strength of the bind.

(b) Number of Rejects (4 pages out). Show the number of samples which, after testing and retesting, were classed as rejectable. This will normally be zero. The space provides for a positive statement of same. Any other condition would be a special situation and should be explained in Remarks.

(c) Percent of Samples Rejected. Will normally be zero.

(2) Process Temperature Test (Hot Strength Test).

(a) Number of Samples Tested. The minimum is five samples.

(b) Number of Failures.Number of samples that failed the original test. There should be no failures on the retest.

(c) Number of Rejects. Indicated in paragraph 16.b. (1) (b).

(d) Percent of Samples Rejected. Will normally be zero. The space provides for a positive statement to this effect.

FROM THE FLEX AND PULL & TEMP. & THICKNESS SECTION OF THE NGA QUALITY REPORT :

Operator Quality Control		**FLEX & PULL**	Independent Quality Control
FLEX	PULL	FLEX	PULL
# REJECTS _____	# REJECTS _____	# REJECTS _____	# REJECTS _____
% REJECTS _____	% REJECTS _____	% REJECTS _____	% REJECTS _____

Operator Quality Control		**TEMP. & THICKNESS**		Independent Quality Control
FLEX	PULL	FLEX	PULL	
# REJECTS _____	# REJECTS _____	# REJECTS _____	# REJECTS _____	
% REJECTS _____	% REJECTS _____	% REJECTS _____	% REJECTS _____	

Figure 16. ''Flex and Pull, Temperature and Thickness'' portion of the NGA Quality Report

(3) Adhesive Thickness Test.

(a) Number of Samples Tested. Minimum of five samples shall be tested.

(b) Sample Average. Average thickness of each sample.

(c) Percent of Samples Rejected. Will normally be zero. Space provided.

CORRECTIVE ACTION FORM		DATE
TO	FROM	
1. DEFECT		
	2. IDENTIFICATION OF ORIGIN (CHECK ONE OR MORE)	
	A. INCOMING RAW MATERIALS AND / OR SUPPLIES	
	B. SOURCE MATERIALS AND / OR DOCUMENTS, I.E., TAPES, MANUSCRIPTS, NEGATIVES, SPECIFICATIONS, ACTION LETTERS, FORMS, ETC.	
	C. OPERATIONS, FABRICATIONS, ASSEMBLY, I.E., PROGRAMMING DATA COLLECTION, MANUSCRIPT PREPARATION, PRINTING, ETC.	
	D. OPERATIONS EXTERNALLY CONTROLLED, I.E., CONTRACTOR, OTHER DIVISIONS, OFFICES, DEPARTMENTS, ETC.	

	E. INSPECTION AND / OR QUALITY CONTROL
	F. PACKING AND SHIPPING
	G. OPERATIONAL PROCEDURE (OR LACK THEREOF)
	H. OTHER - SPECIFY
	3. DIAGNOSIS TO CLARIFY THE CAUSE
	A. **EMPLOYEE CONTROLLABLE** (PERSONNEL ERROR FOR OPERATING AND / OR SUPERVISORY EMPLOYEE - SELECT ONE OR MORE OF THE FOLLOWING IF THIS CAUSE HAS BEEN CHECKED)
	(1) INADEQUATE SELECTION OF PERSONNEL
	(2) INADEQUATE PERFORMANCE OF OPERATION
	(3) INADEQUATE TRAINING
	(4) INADEQUATE SUPERVISION
	(5) INADEQUATE DISCIPLINE
	(6) OTHER - SPECIFY
	B. **MANAGEMENT CONTROLLABLE** (SELECT ONE OR MORE OF THE FOLLOWING IF THIS CAUSE HAS BEEN CHECKED)
	(1) INADEQUATE SOURCE MATERIALS AND / OR DOCUMENTS
	(2) INADEQUATE COMMUNICATIONS
	(3) INADEQUATE MATERIALS
	(4) INADEQUATE OPERATING PROCEDURES
	(5) INADEQUATE INSPECTION AND / OR QUALITY CONTROL METHODS
	(6) INADEQUATE OPERATING EQUIPMENT
	(7) INADEQUATE INSPECTION AND / OR QUALITY CONTROL EQUIPMENT
	(8) OTHER - SPECIFY

C. **JUSTIFICATION** - BASIS FOR SELECTION IN 3 (A) AND (B) ABOVE (CONTINUE ON REVERSE SIDE)

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C. (*CONTINUED*) JUSTIFICATION - BASIS FOR SELECTION IN 3 (A) AND (B) OTHER SIDE

	4. DEVELOP OF A REMEDY
	A. NATURE OF ERROR DOES NOT WARRANT FURTHER CORRECTIVE ACTION OTHER THAN MAKING EMPLOYEE AWARE OF THE ERROR. (DO NOT COMPLETE PARA 4, 5, 6, OR 7 OF THIS FORM)
	B. NATURE OF ERROR WARRANTS DEVELOPMENT OF A REMEDY WHICH IS AS FOLLOWS (COMPLETE PARAGRAPHS 4, 5, 6, OR 7 OF THIS FORM AS NEEDED)

5.	RESPONSIBILITY FOR APPLICATION OF REMEDY (AS NEEDED)
6.	RESPONSIBILITY FOR EVALUATION OF THE EFFECTIVENESS OF THE REMEDY (AS NEEDED) RESPONSIBILITY SHALL NOT BE ASSIGNED TO PERSON(S) LISTED IN PARA 4 OR 5 ABOVE
7.	RESPONSIBILITY FOR THE PREVENTION OF RECURRENCE OF UNSATISFACTORY QUALITY OR DEFECT (AS NEEDED)
	SIGNATURE
8.	CONCUR NON-CONCUR EDMGA SIGNAUTE _____ DATE _____

NOTE :

ANNEX A

CHECKLISTS #1 THROUGH #12

ON SEPARATE EXCEL SPREADSHEET,

(SHEET TABS 1-12)

NOTE :

ANNEX B

PRODUCTION FLOW PROCESS CHART

ON SEPARATE EXCEL SPREADSHEET,