SPECIFICATION FOR RAPID INTERPRETATION PRINTER-PROCESSOR FLY-AWAY KIT

1. GENERAL:

1.1 This specification covers the design, development, and fabrication requirements for a Rapid Interpretation Printer-Processor Fly-Away Kit. The printer, the operation of which should be based on the Diazo process is intended to be portable and suitable for use in both a controlled environment and in areas of high temperature and humidity.

2. APPLICABLE DOCUMENTS:

2.1 The following documents, of the issue in effect on the date of request for proposal, form a part of this specification.

Handbook H-28, Screw Thread Standards for Federal Services

MIL-STD-810A, Military Standard Environmental Test Methods for Aerospace and Ground Equipment.

2.2 In case of conflict between the requirements of this specification and the documents listed above, the requirements of this specification will take precedance.

3. ITEMS REQUIRED:

3.1 The following items are desired by the Government under this procurement.

3.1.1 Three (3) each, Rapid Interpretation Printer-Processor Kits.

3.1.2 Three (3) sets Spare Parts & Supplies

3.1.3 Ten (10) copies, Operators Instruction Manual

3.1.4 Ten (10) copies, Maintenance Manual

3.1.5 Five (5) copies, Monthly Report

3.1.6 Five (5) copies, Final Report

4. SPARE PARTS:

4.1 In addition to the spare fuses required in paragraph 7.18, five (5) spare fuses of each size and rating used in the equipment shall be supplied with each Printer-Processor Kit.

4.2 Spare lamps and bulbs sufficient to support 1000 hours of operation are required.

4.3 Supplies as required for 6 months operation (raw stock not included).

5. GOVERNMENT FURNISHED EQUIPMENT:

5.1 Six (6) each standard fly-away boxes (Figure 1 & 2) will be supplied by the Government under this procurement. The boxes are 20 inches long by 15 inches wide by 11 3/4 inches high inside. (Unobstructed space between ribs and flanges).

STAT 5.2 One (1) each [redacted] GFL 918LW Light Table will be supplied by the Government for use by the contractor for the duration of the contract.

5.3 One (1) set of world wide adaptor plugs will be supplied with each equipment as an accessory. The plugs will be furnished by the Government and will be added to the kits upon delivery. The adapter plugs will fit into a space $1\frac{1}{4}$ in. X $1\frac{1}{4}$ in. X 3 3/4 In. long (See Paragraph 6.1.12).

6. DETAILED EQUIPMENT REQUIREMENTS:

6.1 The items required hereunder (paragraph 3.1.1, 3.1.2, 3.1.3) should comply with the following sub-paragraphs.

6.1.1 The operation of the equipment should be based upon a dry positive to positive process capable of producing transparencies from film positives or negatives.

6.1.2 The unit should be capable of accepting various sized negatives up to a maximum size of $9\frac{1}{2}$ inches wide in roll format and producing $9\frac{1}{2}$ X $9\frac{1}{2}$ prints from these films.

6.1.3 Step and repeat printing is required.

6.1.4 Day light operation is desired. A dark room or safe light should not be required for any portion of the printing process cycle.

6.1.5 The unit should be compatible for use with a STAT [redacted] GFL-918LW, or equal, light table to permit viewing of the negative and selection of the films to be printed.

6.1.6 The unit must operate satisfactorily on 50 or 60 cycle current and over voltage ranges of 70 to 140 volts and 180 to 270 volts. Switching may be employed to attain the various combinations of frequency and voltage.

6.1.7 Processed transparencies should exhibit a minimum resolution of 200 lines/mm with a D maximum of 1.85 and a D minimum of .05 or below.

6.1.8 Unexposed film should have a minimum shelf life, in sealed packages, of six months in an environment of 90-95% relative humidity and a temperature of 110°F to 120°F.

6.1.9 Processed material should have a minimum life under ambient conditions of one year with no change in D maximum and a maximum D minimum of .05.

6.1.10 Physically the unit should be light, durable, contain a minimum number of moving parts and should be either built into or be capable of mounting into for shipment, a GFE fly-away box (paragraph 5.0). Ideally, one box should contain the entire system, but two boxes may be used if the use of one box proves impractical.

6.1.10.1 The box or boxes may be modified internally as required, however, no evidence of any such modification shall be discernible on the box exterior surfaces.

6.1.11 A power cable of suitable, current carrying capacity, six (6) feet in length will be supplied. The cable will be terminated with a standard two-prong plug for attachment to American type power outlets.

6.1.12 Internal storage space should be provided for printing materials, the set of Adapter Plugs and the spare parts.

7. GENERAL DESIGN & CONSTRUCTION REQUIREMENTS:

7.1 The basic design objectives are that the equipment will meet the detailed requirements levied in paragraph 6 and will reflect the utmost in simplicity, have maximum reliability consistent with the state of the art and be easy to operate and maintain.

7.2 All lamps, fuses, and other plug-in items shall be secured with positive holding clamps and shall be capable of being easily released for replacement. These clamps shall be sufficiently sturdy to retain the parts in their proper position under the conditions of shock and vibration specified.

7.3 Mating connectors shall be furnished with all connector receptacles or plugs.

7.4 All terminal strips and connectors shall be adequately marked in a permanent manner so as to identify the facilitate replacement of connections.

7.5 Screw threads for all threaded securing devices shall be of the unified thread series in accordance with Handbook H 28 and supplement thereto, and shall be of the coarse of fine thread series.

7.5.1 All screws, studs and nuts shall be of brass or non-ferrous material of comparable strength protected against corrosion, except where strength requirements dictate the use

of corrosion-resistant steel or nickel-copper alloy. No aluminum nuts shall be employed. These requirements do not apply to parts or assemblies wherein the use of threaded devices is governed by the part or assembly specification or to special mechanical parts which are primarily of ferrous metal construction.

7.5.2 Thread cutting or sheet metal screws shall not be used except where their removal from the part is a remote possibility and their use is acceptable to the technical officer. The use of thread cutting screws is acceptable when used to secure identification or information plates to the equipment.

7.6 Screws or similar devices employed for retaining front panels or removable cover plates shall be of captive types and shall employ slotted head or knurled and slotted heads. They shall be of such design as to be capable of definite individual loosening prior to movement of the part to which they are captive. Design and construction shall be such as to provide for their self-alignment with their retaining nuts, blocks or inserts without sticking and without damage to their threads. Quarter turn fastener may be used as panel, other than front panel, and cover plate retaining devices for non-structural applications.

7.7 Hexagonal nuts are preferred for general usage. Square nuts may be used only when they are captive or floating as part of a fastening device. Knurled circular mounting nuts are satisfactory for use on potentiometer, jacks, toggle switches and similar commercial components.

7.7.1 When self-locking nuts with non-metallic inserts are used, only nylon (polymide) shall be used as a locking medium. Self-locking nuts shall not be used for ground connections.

7.8 All thread-locking devices such as lockwashers shall be fabricated of corrosion-resistant metals or shall be so treated to resist corrosion. All nuts, other than self-locking nuts, and machine screws shall require a lockwasher, or equivalent, under the nut or under the screw head (except flat head screws) if no nut is used. Flat head screws not secured by nut and lockwasher combinations shall be secured by an application of a suitable liquid material such as "loctite" or equivalent.

7.9 The materials used in the construction of equipment and the methods of application shall be as specified herein. Materials which are not otherwise covered shall be of the best commercial quality, of the lightest practicable weight, entirely suitable for the purpose and readily available. However, only nonflammable and nontoxic materials shall be used in the construction of the equipment.

7.10 Materials which are not nutrients for fungus shall be used wherever possible. The use of fungus nutrient materials will not be prohibited in hermetically sealed assemblies and other accepted and proven products, such as paper capacitors and treated transformers. If it is necessary to use nutrient materials, they will be treated by a method which will render the resulting exposed surface fungus-resistant. All machine operations should be completed prior to this surface treatment.

7.11 Metal parts shall be of a corrosion resisting material or of a material given a corrosion-resistant treatment or coating.

7.11.1 Dissimilar metals shall not be used in intimate contact unless suitably protected against electrolytic corrosion. When it is necessary that any combination of such dissimilar metals be assembled, an interposing material compatible to each shall

be used.

7.12 When used for electrical insulation, parts fabricated from laminated, cast or molded thermosetting plastic materials (except transparent plastics) shall be impregnated with a suitable varnish and dried after machining and punching operations are completed. Materials having moisture absorbtion of 1.04 per cent, or less and those used in hermetically sealed assemblies shall not require impregnation. A cotton-based or linen-based laminated or molded-plastic material shall not be used for electrical insulation.

7.13 The thickness of electrodeposited-metallic coatings shall in all cases be adequate to assure conformance with the specification for corrosion resistance. Plating is not required on parts such as bearings, gears and shafts fabricated from brass, bronze or corrosion-resistant steels, unless they are in contact with dissimilar metals under corrosive conditions. Under these conditions an interposing material may be an electrodeposited coating of a properly selected metal.

7.14 Parts fabricated from aluminum alloys shall be cleaned with a cleaning solution such as caustic dip followed by a chemical treatment such as alodine" or equivalent. Where electrical properties are of no consideration, clear anodizing may be used instead of the chemical treatment. Prior to painting, all aluminum alloys must be treated with one of the foregoing methods.

7.15 Painting-After all machining, welding and brazing operations are completed, the exterior and interior surfaces of all enclosures shall have all rust and other visible corrosion products and fluk

removed; shall be thoroughly cleaned of all grease, oil and dirt by solvent wiping, vapor degreasing or caustic washing and rinsing; and shall then be painted.

7.16 Equipment shall not receive overall tropicalization treatment. Equipment shall be fungus-proofed by selection of parts and materials that are non-nutrients for fungus, or the parts and materials shall be so treated prior to their use in the equipment that overall spraying of the equipment is not necessary.

7.17 Methods shall be provided to protect operating and servicing personnel from accidental contact with voltages in excess of 40 volts r.m.s. Protection shall be provided against mechanical features which may reasonably be expected to cause injury during normal operation or because of malfunctioning of equipment. The length of projecting and overhanging edges shall be held to a minimum and all projecting edges and corners shall be rounded. The design and construction shall be such that the outside cases and frames of all units, that is, all external parts shall be at ground potential when the equipment is in operation.

7.18 Primary power circuits shall not be directly grounded. Protective devices shall be provided within the equipment for primary circuits and such other circuits as required for protection of the equipment from damage due to conditions such as overload and excessive heating. All parts which are likely to carry an overload due to circuit malfunction or other deleterious effects shall be designed to provide for such an overlaod. Where this is impracticable, fuses or other devices shall be included to protect the affected parts. All

fuses shall be easily replaceable. One extra fuse of each type and rating used shall be supplied and attached at a convenient location on the equipment for replacement purposes.

7.19 Equipment construction shall be of the lightest weight consistent with sturdiness, safety and reliability. Cast or fabricated construction may be used except that die-casting shall not be used without approval of the technical representative. Castings shall be webbed or otherwise reinforced where required for strength and rigidity. Exterior webbing or reinforcement will be considered in any dimensional limitations which may be imposed.

7.19.1 Pockets, wells, traps, etc., in which water and condensed moisture can collect shall be eliminated or properly drained.

7.20 The equipment shall be designed to use as few lubricants as possible. When lubricants are used, they shall be of a type entirely suitable for the intended use and shall not cause deleterious effects.

7.21 The design of the equipment shall be such that need for special tools for installation, operation, turning, adjusting, or maintenance shall be kept to a minimum. Special tools shall be acceptable to the technical officer shall be supplied by the contractor and shall be mounted securely in the equipment in a convenient place.

7.22 The use of "factory" or sealed adjustment controls shall be kept to an absolute minimum. Where these controls are used, a complete description and instructions for adjustment of such controls shall be included in the technical manual.

7.23 Identification plates shall be mounted in a conspicuous place generally on the front panel of the item. When space does not permit mounting a plate on the front surface, any readily accessible external surface may be used. The plates shall not be positioned so as to interfere with controls or obscure other required information.

8. ENVIRONMENTAL TEST:

8.1 Environmental tests shall be conducted by the contractor to prove the durability of the materials, parts and equipment as a whole; to insure satisfactory equipment and operation and to reduce deterioration when the equipment is operated or stored in any global locality.

8.1.1 Test Facilities - The apparatus used in conducting tests shall be capable of producing and maintaining the test conditions required with the equipment under test installed in the chamber and operating or non-operating as required.

8.1.2 Standard Conditions - Conditions for conducting the equipment operational test shall be as follows:

a.	Temperature:	25 ± 10°C (77° ± 18°F)
b.	Relative humidity:	90 % or less
c.	Barometric pressure:	Local standard

8.1.3 Measurements - All measurements shall be made with instruments, the accuracy of which conforms to acceptable laboratory standards, and which are appropriate for measurement of the environmental condition concerned. The accuracy of the instruments and test equipment shall be verified periodically by the contractor to the satisfaction of the technical officer.

8.1.4 Tolerances - The maximum allowable tolerances on test conditions shall be as follows:

a.	Temperature:	Plus or minus 2°C (3.6°F)
b.	Altitude:	Plus or minus 5% (in feet)
c.	Relative humidity:	Plus 5% minus 0% (R.H. value)
d.	Vibration amplitude:	Plus or minus 10%
e.	Vibration frequency:	Plus or minus 2%

8.1.5 Performance Record - Prior to conducting any of the tests specified herein, the equipment shall be subjected to a comprehensive operational test under standard conditions and a record made of all data. This data shall provide the criteria for checking satisfactory performance of the equipment during or after environmental tests.

8.1.6 Installation Check - Following installation in the test facility and prior to test, the equipment shall be operated sufficiently to insure that no malfunction or damage was caused due to faulty installation procedure or handling.

8.1.7 Criteria for Failure - Deterioration or change in performance of any component which prevents the equipment, after test, from duplicating the performance record established in 8.1.5 or which could prevent the equipment from meeting functional, maintenance or service requirements during the service life, shall provide reason to consider the equipment as having failed to comply with the conditions of the test to which it was subjected.

8.2 Vibration Test - The test will be performed in accordance with Method 514-1, MIL-STD-810A dated 23 June 1964. The test to be utilized will be for Equipment Class 6, "Shipment by common carrier, land sea or air". This test will be performed with the equipment secured in the fly-away boxes.

8.3 Bench Handling - This test is conducted to determine the ability of equipment to withstand the shock encountered during servicing. The chassis and front panel assembly shall be removed from the enclosure, as for servicing, and placed in a suitable position for servicing on a solid bench top. The test shall be performed, as follows, in a manner simulating shocks liable to occur during servicing.

a) Using one edge as a pivot, tilt the opposite edge of the assembly until the horizontal axis forms an angle of 45° with the table, or the opposite edge is 4 inches above the table, which ever occurs first, and permit the assembly to drop freely to the horizontal. Repeat using other practicable edges of the same horizontal face as pivots, for a total of four drops.

b) Repeat step a, with the assembly resting on other faces until it has been dropped for a total of four times on each face on which the assembly could be placed practicably during the servicing. The equipment shall not be operating during the test. At the conclusion of the test the equipment shall be operated and the results compared with the data obtained in accordance with paragraph 8.1.5. The equipment shall

be visually inspected and a record made of any damage resulting from the test.

8.4 Storage Temperature -

8.4.1 High Temperature Tests - The equipment will be exposed to storage at an ambient temperature of 71° C for three (3) days. The temperature of the test chamber shall then be lowered to standard temperature (see 8.1.2) as rapidly as possible. After temperature stabilization, the equipment shall operate satisfactorily according to detailed specifications.

8.4.2 Low - Temperature Tests - The equipment shall be exposed to an ambient temperature of -40°C for three (3) days. The temperature shall then be raised to standard temperature (8.1.2) for twelve (12) hours. The equipment shall then operate successfully according to specifications.

8.5 Drop Tests When Packaged in the Fly-Away Box - The packaged item with a gross weight of not exceeding 50 pounds or with any edge dimension not exceeding 36 inches, shall be dropped cornerwise onto a hard, level, concrete floor or equal surface on each of its eight corners falling freely through a vertical distance of 30 inches. (For heavier and/or larger packages refer to Table 516-1, MIL-STD-810A dated 23 June 1964) Prior to each drop, the package shall be suspended with its center of gravity above the striking corner. At the conclusion of the test the equipment shall be operated and the results compared with the data obtained in accordance with the paragraph 8.1.5. The equipment shall be visually inspected and a record made of any damage resulting from the test.

8.6 Humidity - The equipment removed from the fly-away box, shall be placed in the test chamber which is maintained at atmospheric pressure. Prior to starting the test the chamber temperature shall be between 20° and 38°C (68° and 100°F) with uncontrolled humidity. The temperature and relative humidity shall then be gradually raised to 71°C (160°F) and 95% respectively over a period of two (2) hours. These conditions shall be maintained for a period of not less than six (6) hours. With the relative humidity maintained at 95% the chamber temperature shall then be gradually reduced to 20° to 38°C (68° to 100°F) over a period of not less than 16 hours. This constitutes one (1) cycle. The number of continuous cycles shall be ten (10) for a total test time of not less than 240 hours. At the conclusion of the test, the equipment shall be removed from the chamber and returned to room ambient conditions. Excess moisture may be removed by turning the equipment upside down or by wiping external surfaces only. The equipment shall then be operated and the results compared with the data obtained in accordance with paragraph 8.1.5. The equipment shall be visually inspected and a record made of any damage resulting from the test.

8.7 Altitude - The equipment removed from the fly-away box, shall be placed within the test chamber and the absolute internal pressure of the chamber reduced to 16.8 inches of mercury (corresponding to an altitude of 15,000 feet above sea level). The equipment shall be maintained under these conditions for a period of three (3) hours. After this test, the equipment shall be removed from the chamber and shall perform in accordance with the detailed specifications.

9. DOCUMENTATION:

9.1 Reports:

 report.

as of the last working day of the calendar month. The report will be mailed so as to reach the Customer not later than the first business day after the fifteenth of the month following the reporting period. Non-receipt of any report by the scheduled date may be a basis for withholding payment. Five copies of the report will be prepared for the Customer, distribution will be as given in the contract. The content of the monthly reports will include the following:

9.1.1.1 Activity on the project during the month.

9.1.1.2 Planned activity for the next month.

9.1.1.3 Statement of pending, unresolved, problems whether technical or contractual.

9.1.1.4 Statement, for the record, of agreements or understandings reached orally during the reporting period and whether or not they are of such importance as to warrant formal correspondence to or from the Contracting Officer.

9.1.1.5 Questions still outstanding, unresolved matters and correspondence, etc., and whether due by the Contractor or the Customer.

9.1.1.6 Statement of the status of funds as of the reporting date, broken down to indicate actual and obligated expenditures for labor, material and services. Statement should include expenditures incurred during the reporting period and the current total expended on the contract. Costs should include overhead, G&A, handling charges, fees etc.

9.2 Final Report - A draft copy of this report is to be submitted to the Technical Representative not later than thirty days after delivery of the printed. This report will cover the entire design and

development of the printer from the proposal stage to the delivered device. The report will state, briefly but with sufficient detail, the major problems encountered, the cause of these problems, the solution found for these problems, and an evaluation of the solution based on the results found during the "debugging" of the printer. The Technical Representative will review the draft copy of the final report for completeness in terms of the information that has been requested. The Contractor will deliver five copies of the completed final report within thirty days after receipt of the Technical Representatives approval. Distribution of these five copies will be the same as for the monthly and quarterly reports.

9.3 Operators Manual:

9.3.1 This manual is to contain only the information needed to operate the equipment plus the necessary safety and operator maintenance instructions.

9.3.2 Tests and standards for rating the performance of the printer on a day-to-day basis will be included so the operator will know when the performance of the printer has deteriorated to a level which indicates a need for repair or adjustment.

9.3.3 The Contractor will submit the final draft of the operators manual to the Technical Representative not later than sixty days prior to the delivery date of the printer. The Technical Representative will review the final draft for completeness and procedure. The Contractor will deliver final copies of the completed manual at the same time the printer is delivered.

9.4 Maintenance Manual: This manual is to be written for personnel who are qualified technicians in the fields of optics, mechanics and

electronics. The purpose of this manual is to provide the necessary instructions for the maintenance personnel to properly perform the daily, weekly, monthly, etc., preventive maintenance and to be able to quickly locate and repair or replace faulty or defective components. This manual shall contain, but shall not be limited to, the following:

9.4.1 Electrical circuit diagrams: An over-all block diagram shall be provided. This block diagram shall be keyed to additional, more detailed, diagrams which will indicate the circuitry and function of each block.

9.4.2 Mechanical functional drawings and description: Complete, detailed, dimensioned drawings of all mechanical components are neither necessary nor desired. However, sufficient information, in the form of drawings and description of the movement involved, must be provided so that the maintenance personnel will know how the printer functions when it is in correct operating condition. The manual must contain those dimensions, such as length of travel of a moving component, essential to determine the cause of malfunctions in the printer.

9.4.3 Parts List - This list must contain the title of the part, the manufacturers part number, the number of the part in relation to the printer, and, if specially fabricated or modified, the Contractors part or drawing numbers. In addition the quantity of the part used in the printer and the approximate unit price of the part will be provided.

9.4.4 The sequence of operations, both mechanical and electrical, when a button, lever, knob, etc., is actuated.

9.4.5 Recommended lubrication and preventive maintenance schedule and the supplies and equipment needed.

9.4.6 Tests and standards for measuring the performance of the printer to determine the need for maintenance.

9.4.7 Submission and delivery of the draft and final copies of the maintenance manual will be the same as for the Operators Manual, paragraph 9.3.3 above.

10. ACCEPTANCE INSPECTION AND TEST:

10.1 Contractor's Inspection - The supplier is responsible for the performance of all inspection requirements to insure that the equipments meet the performance specified. The technical representative reserves the right to perform any of the inspections which are deemed necessary to assure supplies and services conform to prescribed requirements.

10.2 Test Material - The contractor shall provide all test instruments, resolution targets, raw stock (unexposed and unprocessed film) and processed negative and positive film used in fabricating and testing the printer. The test material provided by the contractor must be of sufficient quality and quantity to make possible an adequate, truthful and logical test of the printer.

10.3 Proposed Test Methods - A comprehensive test procedure including methods, procedures, equipment and tentative test data forms which the contractor proposes to use in conducting the tests, will be submitted for approval at least thirty (30) days prior to the date of testing of the initial approval. The contractor is not to proceed with the proposed test methods until approval has been obtained from the technical officer.

10.4 Tests and inspection will be conducted at the contractors plant to determine compliance with the requirements of this specification. Final acceptance will be at destination.

10.5 Test damage - All damage to the equipment resulting from the specified tests will be repaired and the equipment will be returned as nearly as possible to "like new" condition before shipment.

11. SHIPMENT & DELIVERY:

11.1 The equipment will be suitably packaged and packed for shipment by commercial carrier. Packing should be such to insure arrival at the destination specified in the contract in an undamaged and workable condition.

ILLEGIB

Next 1 Page(s) In Document Exempt

Approved For Release 2003/01/28 : CIA-RDP78B04770A002600090003-3